

SURVEY OF ALPINE PLANT SPECIES OF  
SPECIAL CONCERN IN THE MEDICINE BOW  
PEAK SPECIAL BOTANICAL AREA

SURVEY OF ALPINE PLANT SPECIES  
OF SPECIAL CONCERN  
IN THE  
MEDICINE BOW PEAK SPECIAL BOTANICAL AREA

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## INTRODUCTION

In 1984, Medicine Bow Peak and the adjacent high summits of the Snowy Range were recommended for special area designation by the Wyoming Natural Area Needs Workshop (Collins 1985). The area was recognized for its rich diversity of arctic-alpine and southern Rocky Mountain alpine endemic species, not found in other alpine areas of the state. The recommendations of the workshop, with some modification of boundaries, were incorporated into the 1985 Medicine Bow National Forest Land and Resource Management Plan. The Forest Plan established a Medicine Bow Peak Special Botanical Area (SBA) in the Brush Creek Ranger District to be placed under management prescription 10C. This management designation places special emphasis on preserving the unique botanical features of the site (USDA Forest Service 1985). Although the boundaries of the SBA are not clearly defined in the plan, the Management Area Map indicates that 10C management is confined to a triangular area encompassing the summits of Medicine Bow Peak, Lookout Peak, and Sugarloaf Mountain (Figure 1).

In 1993, Medicine Bow National Forest contracted with The Nature Conservancy's Wyoming Natural Diversity Database (WYNDD) to collect information on the distribution, abundance, and habitat requirements of selected regionally rare and sensitive alpine species of the Snowy Range. This project was intended to provide baseline data on alpine biodiversity to assist in ecologically-based management decisions for the Medicine Bow Peak SBA and adjacent areas.

Eight rare alpine plant species monitored by WYNDD were chosen for study in 1993 (Table 1). These species were selected on the basis of their global rarity or scarcity in Wyoming (Fertig 1993; von Ahlefeldt 1993). None of these taxa are currently listed as Threatened or Endangered by the US Fish and Wildlife Service or as Sensitive by USFS Region 2 (Estill 1993).

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Table 1  
Rare Alpine Plant Species Surveyed in the  
Snowy Range, Medicine Bow NF, in 1993

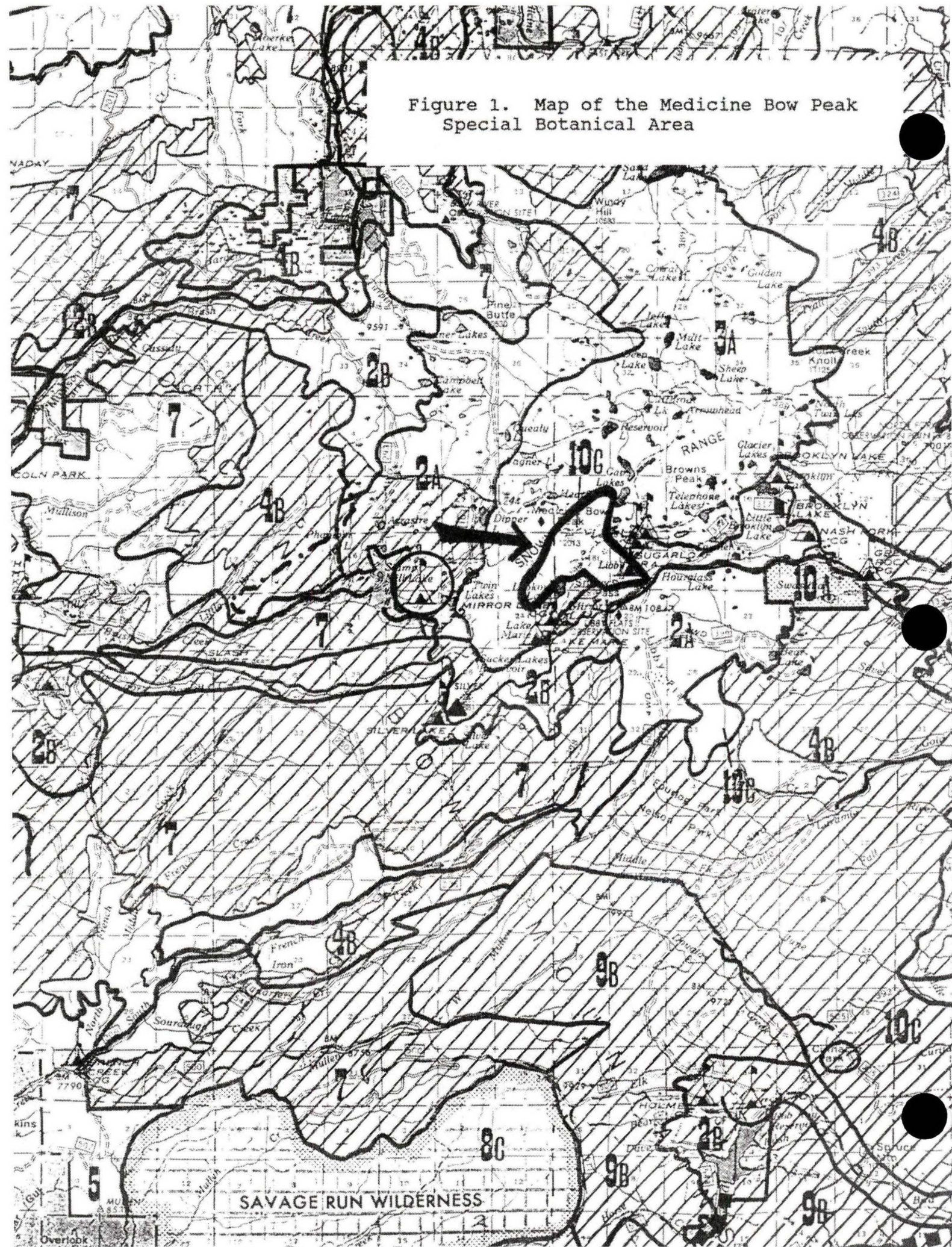
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<u>Artemisia pattersonii</u>	<u>Erigeron melanocephalus</u>
<u>Athyrium distentifolium</u> var. <u>americanum</u>	<u>Erigeron pinnatisectus</u>
<u>Besseyia alpina</u>	<u>Paronychia pulvinata</u>
<u>Chionophila jamesii</u>	<u>Saxifraga serpyllifolia</u> var. <u>chrysantha</u>

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Figure 1. Map of the Medicine Bow Peak  
Special Botanical Area





## METHODS

Information on habitat and distribution of the target species was obtained from secondary sources, including WYNDD files and computer databases, collections of the Rocky Mountain Herbarium (RM) and Central Wyoming College Herbarium (CWC), the literature, and knowledgeable individuals. Field surveys were conducted by the author in late July and early August, 1993. Survey sites of 1-5 acres were established at 65 locations throughout the Medicine Bow Peak SBA and adjacent alpine and subalpine areas of the Snowy Range (Figures 2-4). Information on habitat, associated species, population size, and potential threats was collected for each target species encountered at a site. Locations of populations were mapped on 7.5' USGS topographic maps. If populations were sufficiently large, voucher specimens were collected for deposit in the RM and CWC collections. Information gathered in the field was entered into the computer databases of the WYNDD.

## RESULTS

Six of the eight target species were relocated during survey work in 1993. Blackheaded daisy (Erigeron melanocephalus) and pinnate fleabane (Erigeron pinnatisectus) were found to be extremely common, although restricted to specific substrates or habitats. Rocky Mountain snowlover (Chionophila jamesii) was found to be more widespread than previously known and was documented from Carbon County for the first time (based on RM records). Rocky Mountain nailwort (Paronychia pulvinata) was also found to be more widespread than historical records had indicated. Nonetheless, it too was restricted to specific habitats and was not randomly dispersed.

Alpine kittentails (Besseya alpina) and golden saxifrage (Saxifraga serpyllifolia var. chrysantha) were the least abundant species documented in 1993. Besseya alpina, an early-blooming species, was positively confirmed from only three locations on the west slope of the Medicine Bow Peak massif. Several additional populations of Besseya were observed in vegetative condition, but could not be distinguished from the more abundant B. wyomingensis. Golden saxifrage was found at one site in the saddle between Lookout Mountain and Medicine Bow Peak. This is the first report for this species in the Medicine Bow Range since it was collected by Edwin and Lois Payson in 1926.

No populations of Patterson's sagewort (Artemisia pattersonii) nor American alpine lady fern (Athyrium distentifolium var. americanum) were located during this study. All specimens of alpine sagewort observed in the Snowy Range were identified as A. scopulorum. Lady fern is known from a single historical site on Sugarloaf Mountain that could not be relocated in 1993.



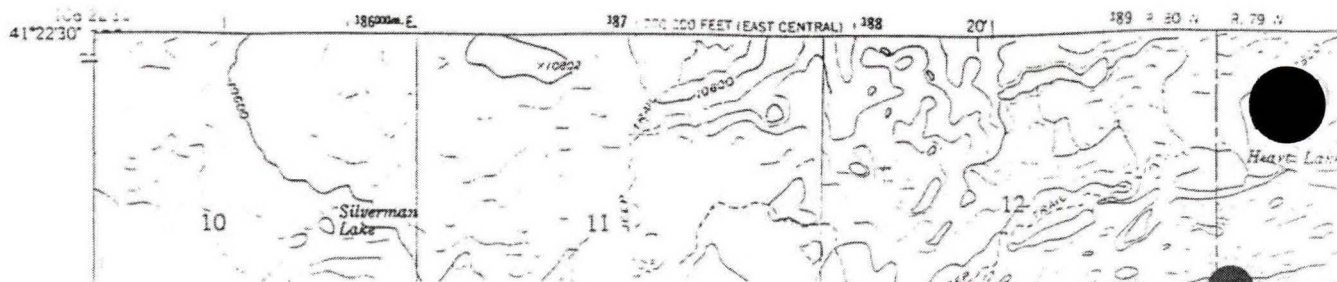
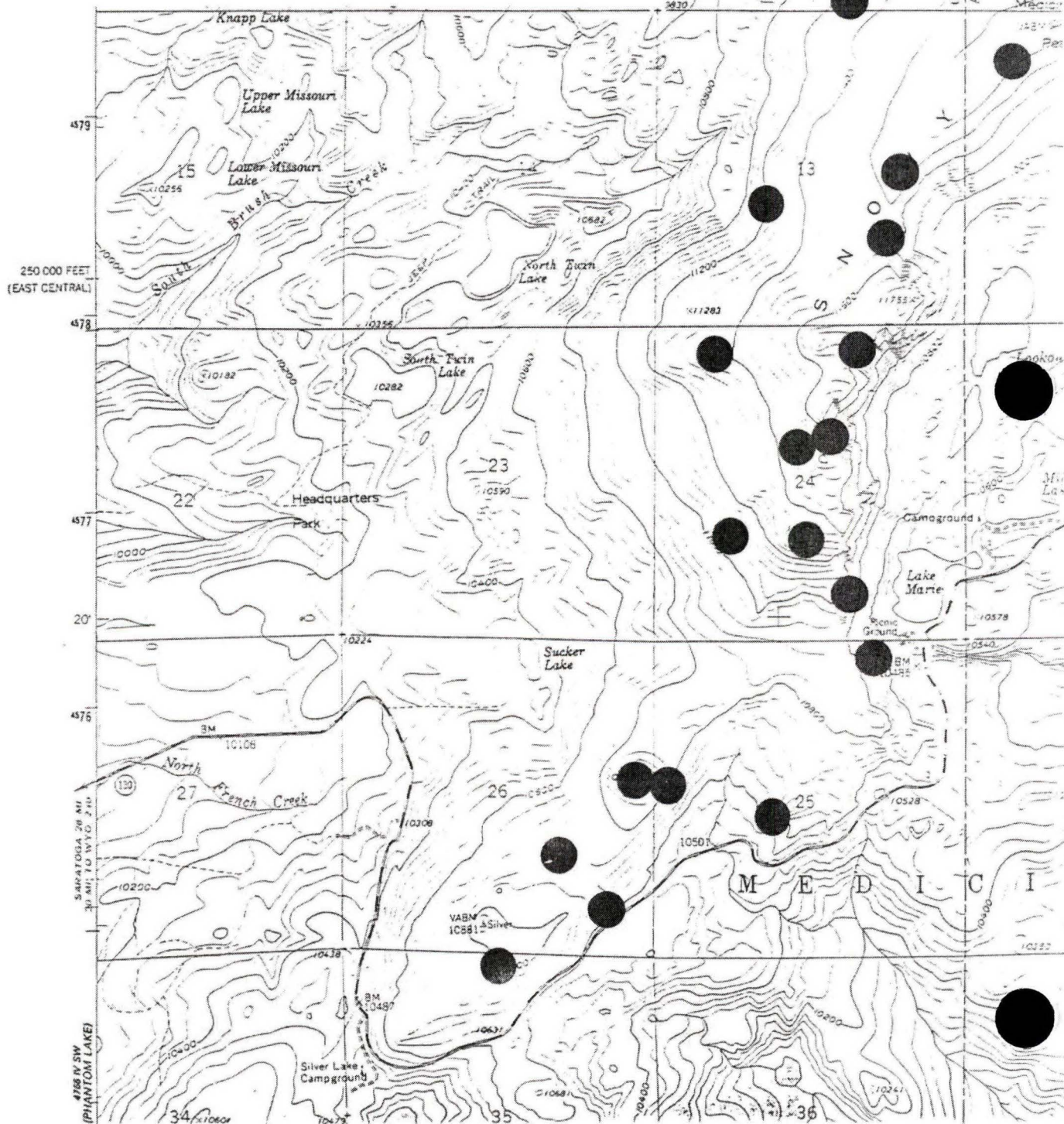


Figure 2. Survey Sites in the Medicine Bow Peak Quad [Northwest Quarter]





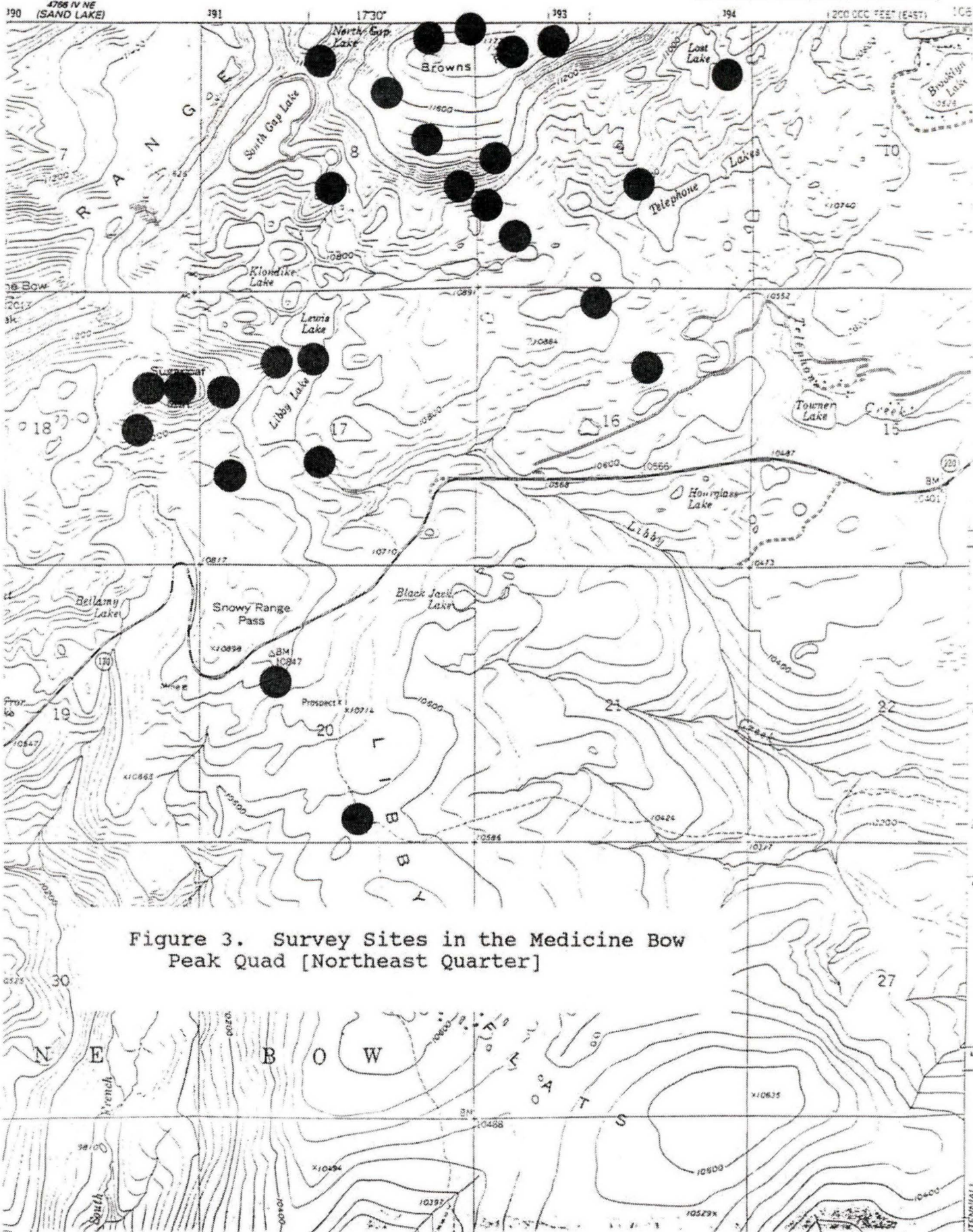
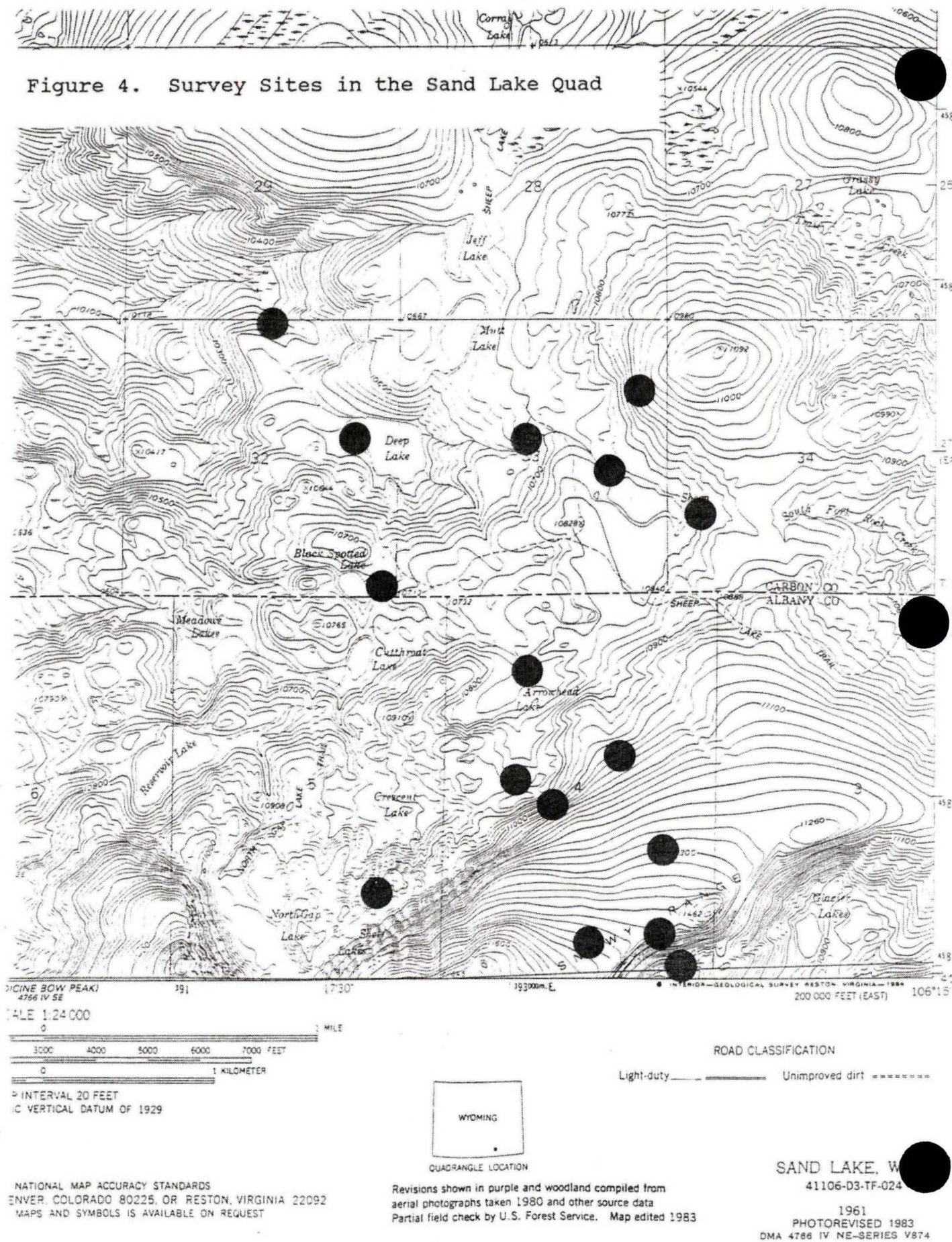




Figure 4. Survey Sites in the Sand Lake Quad



## SPECIES SUMMARIES

Information on the identification, habitat, distribution, and status of each of the target species is presented in the following section. Population maps and location information are also provided in the accompanying figures and tables.



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**Artemisia pattersonii Gray**  
**PATTERSON'S SAGEWORT**  
**Asteraceae or Compositae (Aster family)**

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**Federal Status:** None

**Natural Heritage Rank:** Wyoming: G3/S1

**Description:** Patterson's sagewort is a perennial herb with unbranched, erect stems 8-20 cm tall. The spoon-shaped, blue-green basal leaves are 2-4 cm long, silky-pubescent, and once-pinnately divided into narrow segments. Stem leaves are entire and widely spaced. Flowering stems bear 1-5 horizontal or nodding heads. Involucral bracts are 5-8 mm wide and have conspicuous brown or black margins. Heads consist entirely of yellow disk flowers surrounded by copious, long receptacle hairs (Harrington 1954; Wiens and Richter 1966; Dorn 1992).

**Similar Species:** Rocky Mountain sagewort (Artemisia scopulorum), another herbaceous alpine species, differs in having 5-25 flower heads per stem and yellow-green basal leaves that are twice-pinnately divided (Wiens and Richter 1966; Dorn 1992).

**Flowering/Fruiting Period:** Late July (Wiens and Richter 1966).

**Habitat:** Alpine and subalpine tundra and rocky places, often associated with disturbed habitats (Wiens and Richter 1966; Weber 1987). Elevation 11000-13000 feet in Colorado.

**Global Distribution:** Restricted to the Central Rocky Mountains from southeastern Wyoming through the Colorado Front Range to northern New Mexico (Wiens and Richter 1966).

**Population Size/Distribution in Medicine Bow NF:** The single record of Patterson's sagewort in the Medicine Bows is based on a sterile specimen cited by Wiens and Richter (1966). The only location information provided in this reference is "Snowy Range in southern Wyoming". No specific data are available on population size or habitat. This species was not observed during survey work in 1993.

**Existing or Potential Threats:** Unknown.

**Remarks:** Wiens and Richter (1966) report that A. pattersonii is rarely found in abundance with A. scopulorum. The latter was found to be extremely abundant in alpine turf and fellfield communities in the Snowy Range in 1993. Although reported as



"relatively common" in Colorado, the species' small geographic range makes it potentially vulnerable to habitat disruption and loss.

Figure 5. Line drawing of Artemisia pattersonii from Hall and Clements (1923).





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Athyrium distentifolium Tausch ex Opiz  
var. americanum (Butters) Cronq.  
AMERICAN ALPINE LADY FERN  
Polypodiaceae or Aspleniaceae (Spleenwort family)

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**Synonyms:** A. alpestre var. americanum; A. americanum

**Federal Status:** None

**Natural Heritage Rank:** Wyoming: G4T3/S1  
Utah: G4T3/S1

**Description:** American alpine lady fern is a clump-forming perennial with short, stout rhizomes densely covered by remnant leafstalk bases from previous years. The closely tufted leaves (fronds) are 20-30 cm long, oblong-lanceolate, and thrice pinnately compound (the primary leaflets are divided into secondary leaflets which are themselves pinnately lobed). Leafstalks (stipes) are much shorter than the leaf blades and have brown or blackish membranous scales. The longest leaflets are 2.5-8 cm long and are often folded or rolled, giving the plant a dried-up appearance. The clusters of spore-containing sporangia (fruit dots or sori) are round, less than 1 mm wide, and borne on the underside of the leaflets along the margins. The sori lack a membranous cover (indusium) (Harrington 1954; Hitchcock et al. 1969; Marriott 1993).

**Similar Species:** Lady fern (Athyrium filix-femina) differs in having larger fronds with elongate sori and a curved or horseshoe-shaped indusium. This species is found in woods or thickets, and is presently known only from the Sierra Madre Range in Medicine Bow National Forest (RM records). Bladder fern (Cystopteris fragilis) appears to lack an indusium when the sporangia are fully mature, but can be distinguished by its twice-compound leaves and absence of persistent leafstalk bases. Woodsia spp. also differ in having twice-compound leaves and finely pubescent leafstalks (Dorn 1992).

**Spore Producing Period:** July-August.

**Habitat:** Rocky talus slopes and along rushing streams from middle to high elevations (Nelson 1984). Elevation 11000-11400 ft.

**Global Distribution:** Circumboreal, extending south to Quebec, Colorado, and California (Hitchcock et al. 1969). In Wyoming, it is known only from the Medicine Bow Mountains and Teton Range (Marriott 1993).



**Population Size/Distribution in Medicine Bow NF:** Known only from a single location on the east slope of Sugarloaf Mountain that was last collected in 1934. This area was surveyed in 1993, but no plants were observed. Much of the suitable potential habitat on Sugarloaf Mountain was still under late snowpack when the survey was conducted. No additional populations were located elsewhere in the Snowy Range.

**Existing or Potential Threats:** Over-collection in the past may have severely reduced or extirpated the Sugarloaf population. Grazing by sheep has been suggested as a possible threat (von Ahlefeldt 1993), although it is likely that only the young fiddleheads are palatable.

**Remarks:** Additional surveys should be conducted to determine whether this species is still present in the Snowy Range and if special management actions are necessary.

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Table 2  
Snowy Range Collection Sites for  
Athyrium distentifolium var. americanum

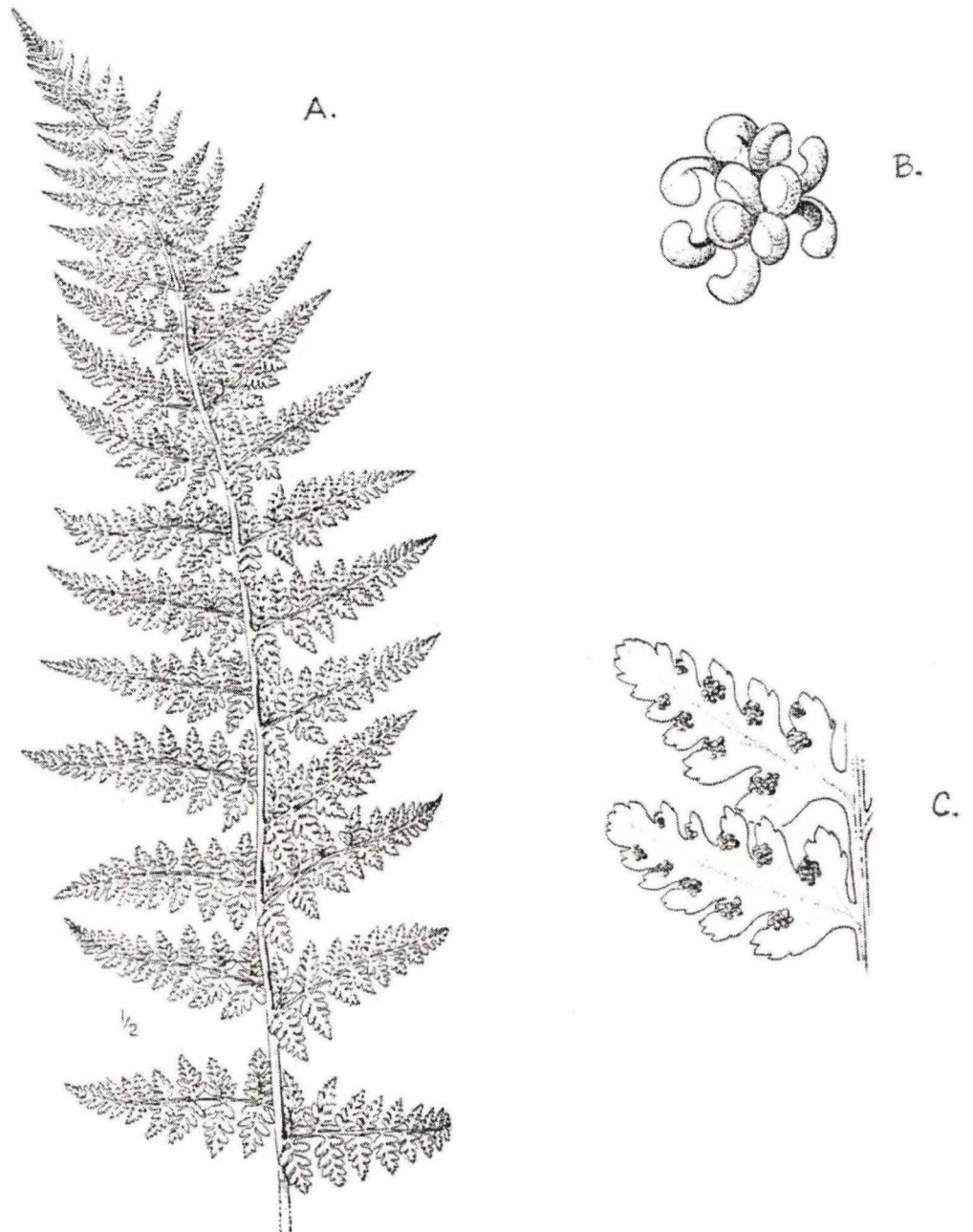
I. Historical Collections

A. Medicine Bow Peak Quad [Northeast Quarter] (Figure 7)

1. Albany Co.: East face of Sugarloaf Mountain. Stony slope.  
27 July 1934. Ownbey & Taylor 1124 (RM).
-



Figure 6. Line drawing of Athyrium distentifolium var. americanum from Hitchcock et al. (1969). A. mature frond B. Sorus with individual spore-containing sporangia. C. Underside of secondary leaflets with sori.



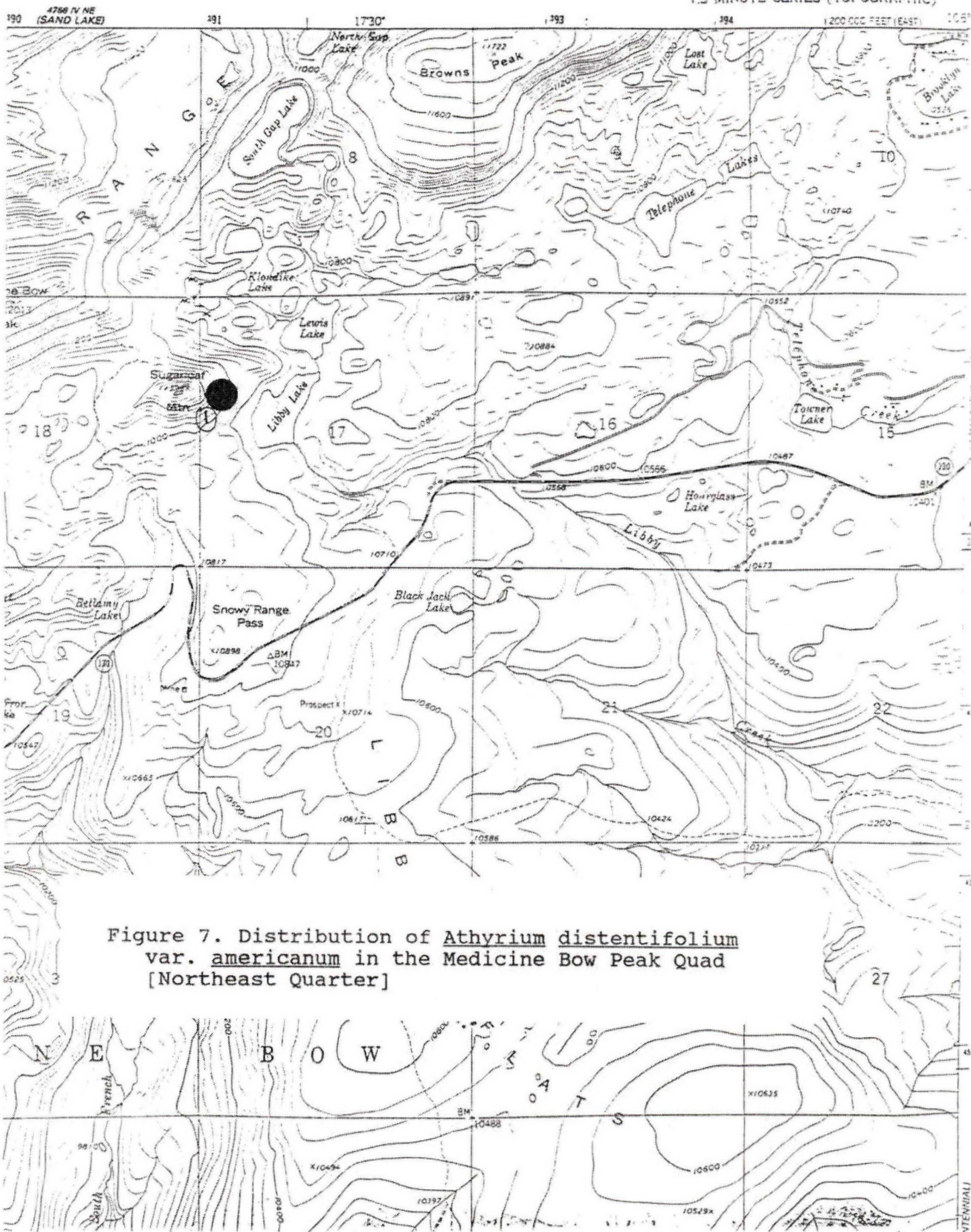


Figure 7. Distribution of *Athyrium distentifolium* var. *americanum* in the Medicine Bow Peak Quad [Northeast Quarter]



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**Besseya alpina (Gray) Rydb.**  
**ALPINE KITTENTAILS**  
**Scrophulariaceae (Figwort family)**

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**Federal Status:** None

**Natural Heritage Rank:** Wyoming: G3?/S1  
New Mexico: G3?/S2  
Utah: G3?/S1

**Description:** Alpine kittentails is a perennial herb with woolly or glabrous stems 5-15 cm tall. The basal leaf blades are heart-shaped, 2-5 cm long, and lightly toothed on the margins. Stem leaves are alternate, sessile, and bract-like. Flowers with a two-lobed, violet-purple corolla and two elongate, drab-colored stamens are arranged in a woolly, spike-like terminal inflorescence (Harrington 1954; Duft and Moseley 1989).

**Similar Species:** Wyoming kittentails (Besseya wyomingensis) lacks petals and has more conspicuous purple stamens. Silky phacelia (Phacelia sericea) has dense spikes of purple flowers and larger, pinnately-divided leaves. Alpine speedwell (Veronica wormskjoldii) differs in having dark blue flowers and numerous, oppositely-arranged stem leaves.

**Flowering/Fruiting Period:** June-August. One of the first alpine plants to bloom after snow melts (Duft and Moseley 1989).

**Habitat:** Moist alpine meadows, tundra, and rocky slopes (Nelson 1984). Elevation 11200-11800 ft.

**Global Distribution:** Southern Wyoming, Colorado, east-central Utah, and New Mexico (Duft and Moseley 1989). In Wyoming, it is restricted to the Snowy Range in Albany and Carbon Counties.

**Population Size/Distribution in Medicine Bow NF:** Only three populations were located on the west slope of the Medicine Bow Peak massif in 1993. The size of these populations ranged from 1-12 flowering plants. Additional individuals observed in vegetative condition could not be reliably distinguished from the morphologically similar B. wyomingensis. All 1993 observations were restricted to moist sites associated with recently melted snow. It is possible that this species would have been found to be more numerous or widespread if surveys had been conducted earlier in its flowering season. Nelson (1984) anecdotally reports B. alpina as "common" in the Snowy Range.

**Existing or Potential Threats:** Sheep grazing is a potentially high threat (von Ahlefeldt 1993).

Figure 8. Line drawing of Besseya alpina from Cronquist et al. (1984). A. habit B. flower with 2 stamens and 2-lobed corolla C. fruit D. basal leaf

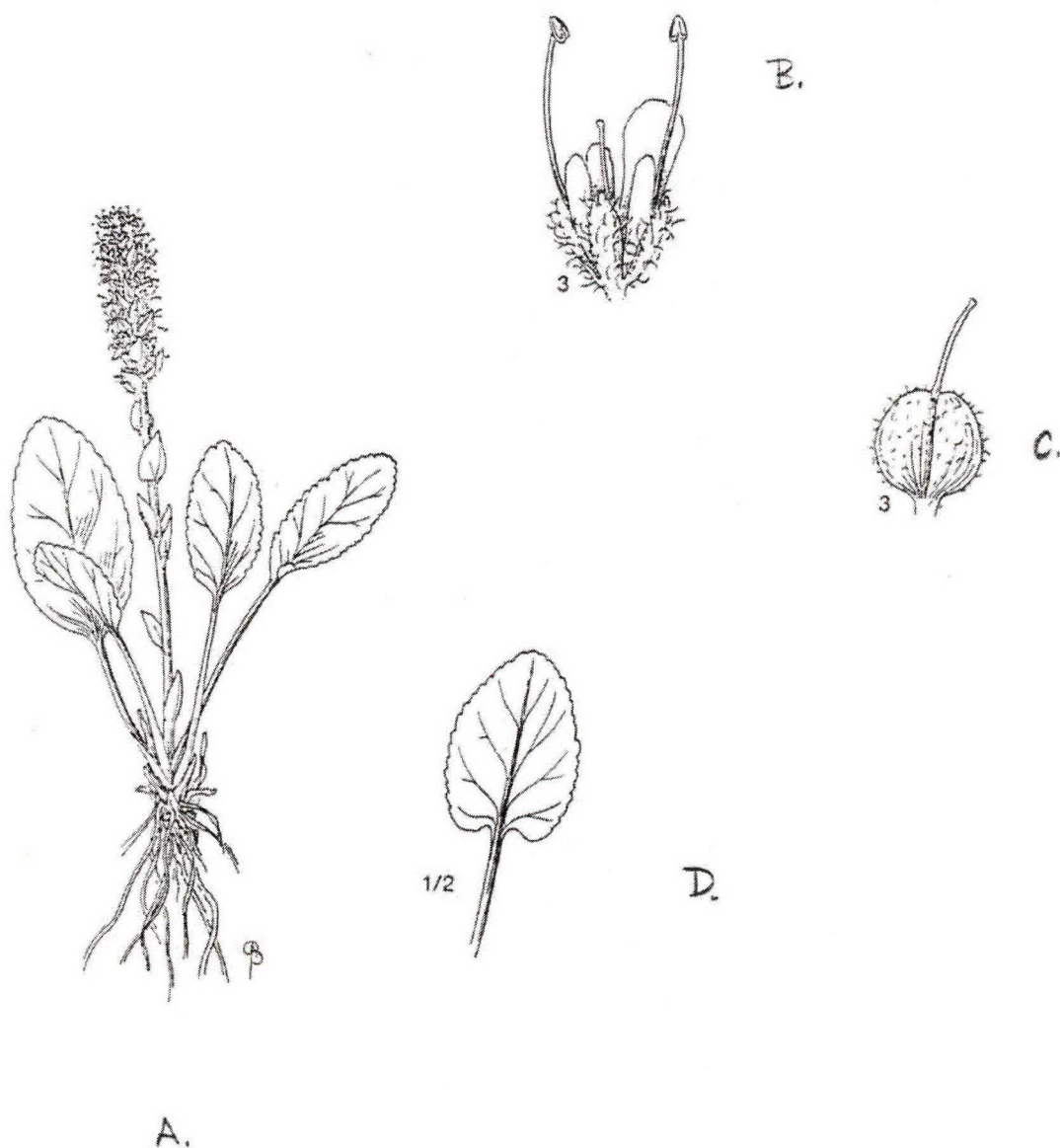




Table 3  
Snowy Range Collection Sites for  
Besseya alpina

I. 1993 Survey Sites

A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 9)

1. Carbon Co.: South slope of Lookout Peak, ca 0.3 mi W of Lookout Lake, ca 0.75 mi N of Lake Marie (T16N R80W S24 NW4 of NE4). Geum rossii alpine turf on west-facing slope among boulder outcrops and talus. Elev. 11650 ft. 6 August 1993.

12 flowering plants observed at edge of boulder field below ridgeline and on moist soil adjacent to small snow-melt streams. Besseya wyomingensis also found in the general area. Numerous vegetative plants observed, but these could not be placed confidently in either taxon. Appears to flower very early (at sites below snow drifts, it was often the only plant in bud or flower). Found with Erigeron simplex, Chionophila jamesii, Danthonia, Thlaspi montanum. Fertig 14258 (RM).

2. Albany Co.: Slopes on north side of Medicine Bow Peak, ca 0.4 mi NW of summit, ca 0.3 mi S of Heart Lake (T16N R79W S7 SW4 of NW4 of SW4). Rocky, west-facing slope with boulder/talus fields interrupted by discontinuous meadows of Geum and cushion plants. Snow drifts present in lee of slope. Elev. 11200 ft. 6 August 1993.

A single flowering plant observed on wet site below snow drift. Neighboring plants at this site all in bud or vegetative. Scattered Besseya leaves in vicinity may belong to this species or B. wyomingensis.

3. Carbon Co.: West slope of Medicine Bow Peak, ca 0.6 mi W of summit, ca 1.75 mi N of Lake Marie (T16N R80W S12 SW4 of SE4). West-facing rock outcrops with patches of Geum rossii turf meadows and thickets of Salix glauca. Elev. 11200 ft. 6 August 1993.

Present on moist turf at the edge of small rocks. 1 plant in flower, several additional plants in vegetative condition. With Chionophila jamesii, Erigeron simplex.

II. Historical Collections

A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 9)

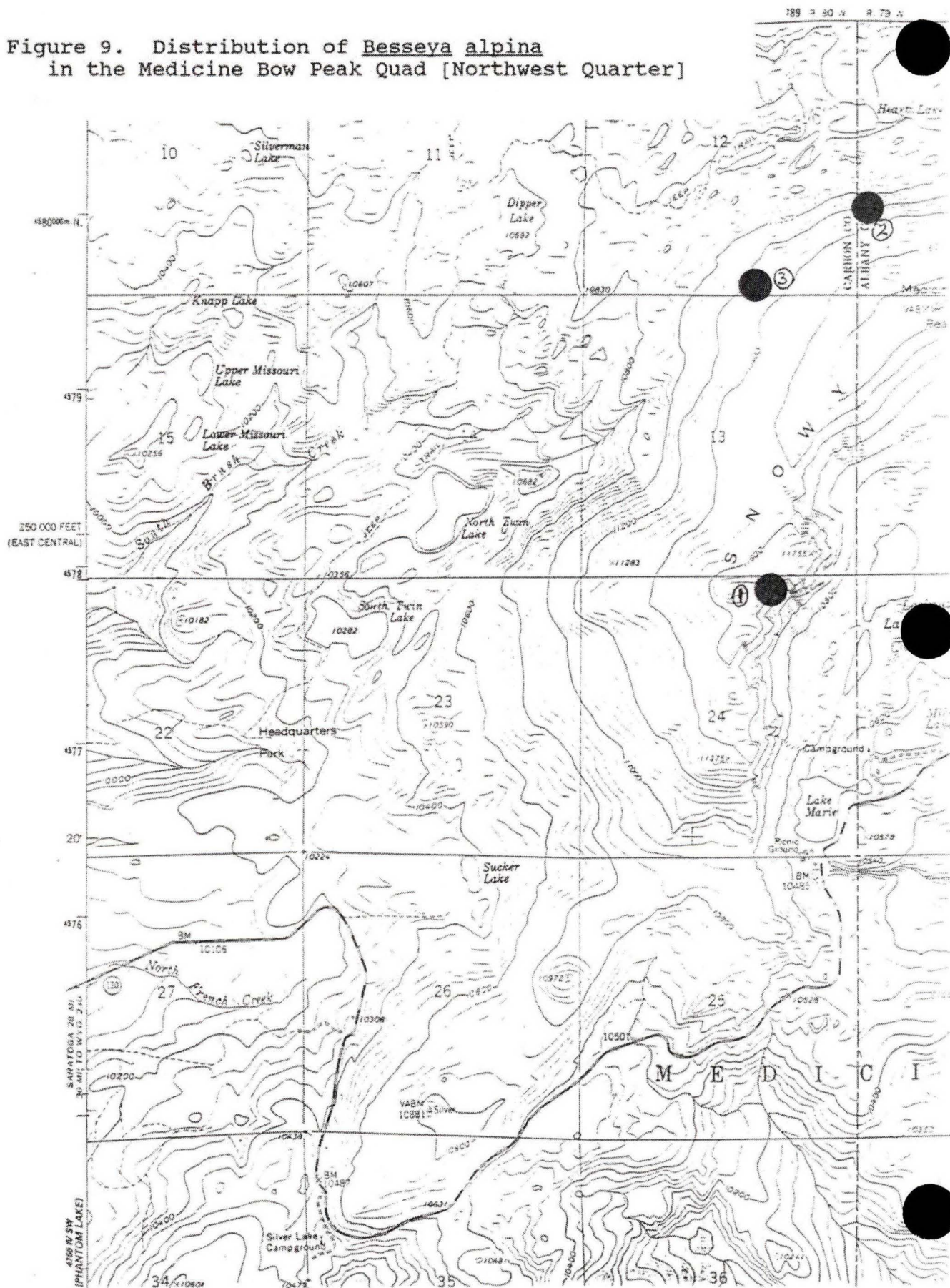
1. Carbon Co. Lookout Peak. Rocky slopes. 18 July 1932. Solheim 523 (RM). Probably the same general location as Fertig 14258 (RM).

**B. Medicine Bow Peak Quad [Northeast Quarter] (Figure 10)**

4. Albany Co.: Snowy Range; East slope of Medicine Bow Peak, adj. to trail to summit (T16N R79W S7). Among boulders on steep, alpine slope. Elev. 11000-11800 ft. Beaman and Stone 1393 (RM); Bliss 635 (RM); Wetherell 403 (RM). Map location approximate.
5. Albany Co.: Snowy Range: "Telephone Mines". Alpine summits. 1 Aug 1900. Nelson, A. 7868 (RM). Map location approximate.
6. Albany Co.: "La Plata Mines" (Brooklyn Lake area). 29 Aug 1898. Nelson, E. 5239 (RM). Map location approximate.



Figure 9. Distribution of Besseyia alpina  
in the Medicine Bow Peak Quad [Northwest Quarter]









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*Chionophila jamesii* Benth.  
ROCKY MOUNTAIN SNOWLOVER  
Scrophulariaceae (Figwort family)

---

**Federal Status:** None

**Natural Heritage Rank:** Wyoming: G3/S1  
New Mexico: G3/S2?

**Description:** Rocky Mountain snowlover is a glabrous or minutely pubescent herb with a single stem 5-10 cm tall. The basal leaves are spoon-shaped, thick, and entire, while the stem leaves are much reduced and linear. Flowers are arranged in a one-sided, dense, spike-like inflorescence and are greenish white to cream-colored. The 10-12 mm long, snapdragon-like flowers are two-lipped and somewhat flattened horizontally. Flowers contain four fertile, anther-bearing stamens and a fifth, sterile, glabrous staminode (Harrington 1954; Duft and Moseley 1989).

**Similar Species:** Alpine species of beardtongue (*Penstemon* spp.) can be distinguished by having blue or purple flowers arranged in dense whorls or open panicles (but not in one-sided racemes) and in having bearded staminodes. Vegetatively, American bistort (*Polygonum bistortoides*) can resemble *Chionophila*, but differs in having longer basal leaves with prominent mid-veins (Nelson 1984).

**Flowering/Fruiting Period:** July-August.

**Habitat:** Moist grassy slopes or flats, often in rocky or gravelly soil at high elevations (Nelson 1984). Soils are often bare or sparsely vegetated and moist from recent snow melt. They also have well-developed cryptogamic crusts composed of lichens, algae, and mosses. Elevation 10800-12000 ft.

**Global Distribution:** Restricted to the Rocky Mountains of southeastern Wyoming and Colorado. In Wyoming, it is known only from the high peaks of the Snowy Range in Albany and Carbon Counties (WYNDD records).

**Population Size/Distribution in Medicine Bow NF:** Populations were found to vary from just a few individuals to several hundred. The largest populations were found on the west slopes of the massif of Medicine Bow Peak. According to RM records, *Chionophila* had not previously been reported from this area (or from Carbon County). In all, snowlover was observed at 25 sites on Medicine Bow Peak and Browns Peak in 1993, bringing the total known locations on the Forest to over 30.

**Existing or Potential Threats:** Trampling and sheep grazing are potential threats (von Ahlefeldt 1993).

**Remarks:** The name Chionophila is derived from the Greek for "snow beloved" and describes this species' preference for habitats below late-lying snowbanks.

Figure 11. Line drawing of Chionophila jamesii x 1 (by the author)





Table 4  
Snowy Range Collection Sites for  
Chionophila jamesii

I. 1993 Survey Sites

A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 12)

1. Carbon Co.: Southwest slope of Medicine Bow Peak massif, ca 0.5 mi W of Lake Marie, ca 0.75 mi NE of Sucker Lake (T16N R80W S24 SE4 of NW4 of SW4). Geum rossii turf meadow in opening amid quartz talus slope/boulder field. Bare, moist patches of soil present. With Erigeron simplex, Silene acaulis, Trifolium dasyphyllum, Carex scopulorum, Artemisia scopulorum. Elev. 11000 ft. 6 August 1993.

100-125 widely scattered plants on area of ca 0.5 acre. On bare soil with abundant cryptogamic crust.

2. Carbon Co.: Southwest flank of Medicine Bow Peak massif, adjacent to Medicine Bow Peak trail, 0.25 air mi W of north shore of Lake Marie (T16N R80W S24 NE4 of SW4). Base of quartz boulder/talus hill and at edge of Picea engelmannii krummholz. Soil moist, gravelly, with some needle duff. Grassy spaces between rocks with Geum rossii, Artemisia scopulorum, Pedicularis parryi, Deschampsia cespitosa. Elev. 11300 ft. 6 August 1993.

Found in full sun on moist, bare soil near trail. Absent from thick Geum turf or shade of krummholz. With Erigeron simplex, Haplopappus pygmaeus. Fertig 14241.

3. Carbon Co.: Southwest flank of Medicine Bow Peak massif, ca 1 air mi E of South Twin Lake, ca 0.5 mi SW of Lookout Peak (T16N R80W S24 SE4 of NW4). Rocky alpine tundra community on gentle, W-facing slope. With Geum rossii, Artemisia scopulorum, Polygonum bistortoides, Erigeron simplex. Soil well developed, fine textured. Elev. 11500 ft. 6 August 1993.

Very abundant, especially in areas with bare soil patches. Scattered individuals also found in thick Geum turf. Estimated 500 plants found in area of 3-4 acres. With Saxifraga rhomboidea, Pedicularis parryi.

4. Carbon Co.: South slope of Lookout Peak, ca 0.3 mi W of Lookout Lake, ca 0.75 mi N of Lake Marie (T16N R80W S24 NW4 of NE4). Geum rossii alpine turf on west-facing slope among boulder outcrops and talus. Elev. 11650 ft. 6 August 1993.

Abundant in thick turf and on open soil patches with cryptogamic crusts. 400-500 plants estimated in area of 2-3 acres. With Eritrichium nanum, Polygonum bistortoides, Besseyia wyomingensis.



5. Carbon Co.: West slope of Medicine Bow Peak massif, ca 1 mi SW of summit, ca 0.75 air mi E of North Twin Lake (T16N R80W S13 NE4 of SW4). Steep, west-facing Geum rossii turf slope adjacent to quartzite boulder and talus fields below snowfield. Areas of bare, gravelly soil. With Artemisia scopulorum, Deschampsia cespitosa. Elev. 11200 ft. 6 August 1993.

Scattered, but locally common, especially on bare soil. Occasionally found in thick Geum turf. Fertig 14261 (RM).

6. Carbon Co.: West slope of Medicine Bow Peak, ca 0.6 mi W of summit, ca 1.75 mi N of Lake Marie (T16N R80W S12 SW4 of SE4). West-facing rock outcrops with patches of Geum rossii turf meadows and thickets of Salix glauca. Elev. 11200 ft. 6 August 1993.

Locally very abundant in turf communities at edge of rock fields. 150 plants observed in one plot of ca 300 sq ft.

7. Carbon Co.: West slope of Medicine Bow Peak, ca 0.5 mi WNW of summit, ca 0.4 mi S of Heart Lake (T16N R80W S12 NE4 of SW4 of SE4). Rocky, west-facing slope with large patches of Geum rossii/cushion plant meadow interspersed with boulder fields. Elev. 11200 ft. 6 August 1993.

Extremely large population (2000-3000 plants estimated) on moist, lichen-gravelly soil. With Phlox pulvinata, Minuartia obtusiloba. One of the largest populations observed in the Snowy Range.

8. Albany Co.: Slopes on north side of Medicine Bow Peak, ca 0.4 mi NW of summit, ca 0.3 mi S of Heart Lake (T16N R79W S7 SW4 of NW4 of SW4). Rocky, west-facing slope with boulder/talus fields interrupted by discontinuous meadows of Geum and cushion plants. Snow drifts present in lee of slope. Elev. 11200 ft. 6 August 1993.

Very common on sites with bare, moist soil, especially where sheltered by rocks. Less abundant on turf-dominated sites with high vegetative cover. With Silene acaulis, Besseya alpina, Thlaspi montanum.

9. Albany Co.: Slopes on north side of Medicine Bow Peak, ca 0.4 mi N of summit, ca 0.75 mi W of South Gap Lake (T16N R79W S7 NE4 of SW4). West-facing bench of Geum rossii turf and bare, moist soil among field of boulders. Much bare soil with abundant lichens. Elev. 11400 ft. 6 August 1993.

Ca 100 plants present in area of about 150 sq ft. Plants mostly all vegetative. With Polygonum bistortoides, Artemisia scopulorum, Erigeron simplex.



10. Albany Co.: Boulder field on north side of summit of Medicine Bow Peak (T16N R79W S7 SE4 of SW4). Lower slope of quartz boulder field/talus slope with small patch of open, rocky Geum turf with much exposed gravelly-muddy soil. Elev. 11700 ft. 6 August 1993.

220 flowering plants and ca 200 vegetative plants observed in an area of suitable moist, bare soil habitat of ca 280 sq ft. Occurs with lichens, Campanula rotundifolia, Silene acaulis, and Erigeron simplex on level shelf below melting snowfield.

11. Albany Co.: Boulder pile on ridgeline due S of summit of Medicine Bow Peak, ca 1 mi W of Lewis Lake (T16N R79W S18 NW4 of NW4). Base of quartzite boulder hill and rocky, flat alpine meadow dominated by Geum rossii and cushion plants. With Eritrichium nanum, Phlox pulvinata, Saxifraga rhomboidea, Festuca brachyphylla. Elev. 11900 ft. 6 August 1993.

Scattered, but abundant in turf-dominated areas with high vegetative cover and on moist, exposed soil with well developed cryptogammic crusts.

**B. Medicine Bow Peak Quad [Northeast Quarter] (Figure 13)**

12. Albany Co.: South slope of Sugarloaf Mountain on east side of ridge extending SW from Sugarloaf to Lookout Lake (T16N R79W S18 NE4 of SE4). Base of rock wall and rocky, gravelly basin at toe of mountain. Elev. 11100 ft. 28 July 1993.

Open, barren, quartz gravel flats at edge of low grove of Engelmann spruce. Soil moist from recent snow runoff. Plants scattered with Arctostaphylos uva-ursi, Potentilla diversifolia, Pedicularis parryi, Penstemon whippleanus.

14. Albany Co.: East slope of Sugarloaf Mountain along N-S trending ridge downslope of summit (T16N R79W S17 SW4 of NW4). West-facing quartz rock outcrop below large snow field. Elev. 11000 ft. 28 July 1993.

Scattered on moist, bare soil or in spaces between rocks on west side of ridge. Found where vegetative cover is low. 5 plants observed in area of ca 50 sq ft.

16. Albany Co.: Lewis Lake trail, ca 0.2 mi E of South Gap Lake, ca 0.4 mi N of Lewis Lake at SW toe of Browns Peak (T16N R79W S8 NE4 of SW4). Gravelly, W-facing slope of Geum turf below low rock outcrop and krummholz of Engelmann spruce and subalpine fir. Elev. 10900 ft. 4 August 1993.

40-50 plants in fruit on open slope with bare, sandy-gravel soil.



17. Albany Co.: Ridge between south bank of North Gap Lake and north bank of South Gap Lake, in saddle between massif of Medicine Bow Peak and Browns Peak (T16N R79W S8 NE4 of NW4). Quartz boulder outcrop and rock field with shelves of Geum turf and some bare soil. Soil moist from recent snow melt. Elev. 11000 ft. 4 August 1993.

In full sun on gravelly-sandy soil with well developed cryptogammic crusts and Selaginella. 300-400 plants observed in small area, colonies often very dense. With Artemisia scopulorum, Luzula spicata, Minuartia obtusiloba.

18. Albany Co: Chain of lakes ca 0.25 mi S of south slope of Browns Peak, ca 0.5 mi W of Telephone Lakes (T16N R79W S9 SW4 of SW4). Wet meadow of Caltha leptosepala, Trollius laxus, Ranunculus alismifolius, and Salix planifolia var. monica surrounded by unmelted snow drifts. Elev. 10880 ft. 27 July 1993.

Common on quartz-gravelly soil with abundant lichens and well-developed cryptogammic crusts. On flats in full sun with Geum rossii, Selaginella densa, Polygonum viviparum.

19. Albany Co.: Southern rim of Browns Peak plateau, ca 1 air mi N of WY Hwy 130 (T16N R79W S9 NW4 of SW4). Open, S-facing quartz talus slope and Geum turf community at top of steep slope. Elev. 11400 ft. 27 July 1993.

Locally common on moist, rocky sites with some bare soil. Absent from microsites with thick, grassy turf. With Artemisia scopulorum, Geum rossii, Potentilla diversifolia, Silene acaulis. Most in flower. Occurs in open or in lee of rocks.

20. Albany Co.: North end of plateau at summit of Browns Peak, ca 0.1 mi NW of summit knob (T16N R79W S8 NE4 of NE4 of NE4). Rocky quartz boulder fields with scattered Geum rossii turf and cushion plant communities on alpine flats. Elev. 11680 ft. 27 July 1993.

Locally abundant on sites with some bare soil. Absent or rare where turf communities are dominant and vegetative cover is high. With Besseya wyomingensis, Pedicularis parryi, Mertensia viridis, Artemisia scopulorum. Fertig 14196.

21. Albany Co.: East slope of Browns Peak on gently sloping plateau below summit, ca 1.5 mi N of WY Hwy 130 (T16N R79W S9 NE4 of NW4). Quartz rock field with scattered grassy Geum meadows interspersed with bare soil. With Silene acaulis, Artemisia scopulorum, Erigeron simplex. Elev. 11600 ft. 27 July 1993.



Common on moist, bare soil. 100 plants observed in area of ca 40 sq ft. Ca half of population in flower.

**C. Sand Lake Quad (Figure 14)**

23. Albany Co.: North bank of Upper Shelf Lake at toe of north slope of Browns Peak, ca 0.25 mi NE of North Gap Lake (T16N R79W S5 NW4 of SE4 of SE4). Gravelly slope with isolated patches of Geum rossii turf. Overall vegetative cover low. Soil thin, sandy-gravel with well developed cryptogamic crusts. Elev. 11000 ft. 4 August 1993.

Small colony on bare, moist soil below snow drift.

24. Albany Co.: Northeast slope of Browns Peak, ca 1 mi W of North Gap Lake (T16N R79W S4 SW4 of SE4). Uneven, rocky terrain with large exposed patches of bare, moist soil, patches of Picea engelmannii krummholz, and dense stands of Salix glauca. Geum cover very low. Elev. 11500 ft. 27 July 1993.

On bare, moist ground below patch of melting snow. With Minuartia obtusiloba, Polemonium viscosum, Artemisia scopulorum, Polygonum bistortoides. Locally abundant.

25. Albany Co.: Ridgeline overlooking Lost Lake at edge of plateau east of summit of Browns Peak (T16N R79W S4 SE4 of SE4). Quartz boulder slope and Geum rossii/Vaccinium meadow with patches of bare, moist soil and gravel. Elev. 11400 ft. 27 July 1993.

76 flowering and vegetative plants on bare soil and gravel with well developed cryptogamic crusts. With Artemisia scopulorum, Vaccinium cespitosum, Aquilegia coerulea.

26. Albany Co.: North slope of Browns Peak, ca 1 mi SE of Arrowhead Lake (T16N R79W S4 NE4 of SE4). Salix glauca thickets in shallow depressions in rock fields at timberline. Patches of bare, moist soil present. With Geum rossii, Pedicularis groenlandica, P. parryi, Polygonum viviparum. Elev. 11300 ft. 4 August 1993.

Locally abundant on moist, bare soil. Absent or uncommon on adjacent patches of drier Geum turf.

27. Albany Co.: North slope of Browns Peak due E of unnamed pair of lakes at toe of mountain, ca 0.25 mi S of Arrowhead Lake (T16N R79W S4 NE4 of SW4). Rocky slope with patches of bare, moist soil and thickets of Salix glauca and Picea engelmannii. Elev. 11000 ft. 2 August 1993.

Locally common on barren, moist, gravelly soil among rocks below talus slope. With Luzula spicata, Polygonum bistortoides, Minuartia obtusiloba.

28. Albany Co.: North slopes of Browns Peak, ca 0.25 mi ESE of Arrowhead Lake (T16N R79W S4 SW4 of NE4). Salix planifolia var. monica community in rocky depression with scattered snow melt ponds. Elev. 11050 ft. 2 August 1993.

Rare on bare, moist ground at edge or under willow thickets. With Salix cascadiensis, Juncus, Sibbaldia. Fertig 14224 (RM).

## II. Historical Collections

### A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 12)

11. Albany Co.: Just below summit of Medicine Bow Peak (T16N R79W S18). Elev. 11900 ft. 2 August 1988. Scott 6848, 6881 (RM, CWC).

### B. Medicine Bow Peak Quad [Northeast Quarter] (Figure 13)

13. Albany Co.: Ca 0.75 mi W of Lewis Lake parking lot on trail to Medicine Bow Peak, N side of Sugarloaf (T16N R79W S18 NE4). Loamy clay in stony area with Artemisia and Deschampsia. Elev. 10800 ft. 2 August 1973. Nelson, B. E. 836 (RM).

Ca 0.5 mi W of Lewis Lake (T16N R79W S18 NE4NE4). Rocky areas in meadow type places. Elev. 11000 ft. 12 July 1979. Lichvar 2006 (RM).

15. Albany Co.: South side Lewis Lake (T16N R79W S17 NW4). Dry, rocky area along trail with Silene, Salix. Elev. 11000 ft. 12 July 1979. Lichvar 2010 (RM).

22. Albany Co.: La Plata Mines. 28 August 1898. Nelson, E. 5206 (RM).

### C. Sand Lake Quad (Figure 14)

29. Albany Co.: Slope just W of West Glacier Lake, around plot # 68 (T16N R79W S3 South 2). Dry, rocky, southeast-facing slope. Elev. 10790 ft. 18 July 1989. Haines 7535 (RM).

30. Albany Co.: Ravine along southeast side of ridge between East and West Glacier Lakes (T16N R79W S3 South 4). Moist meadow on northwest-facing slope across stream from snowbank. Elev. 3287 MSM. 29 July 1988. Haines 7192 (RM).



#### D. Unmapped Occurrences

Albany Co.: East slope of Medicine Bow Peak. Alpine meadows and fellfields. Elev. 11000-11500 ft. 11 August 1984. Stein 1896 (RM).

Albany Co.: Medicine Bow Peak. 21 July 1932. Nelson, R. A. 131 (RM).

Albany Co.: Medicine Bow Mountains. Alpine summits. 1 August 1900. Nelson, A. 7872 (RM).

Albany Co.: Near summit of Medicine Bow Peak. Elev. 12005 ft. 3 August 1960. Wetherell 367 (RM).

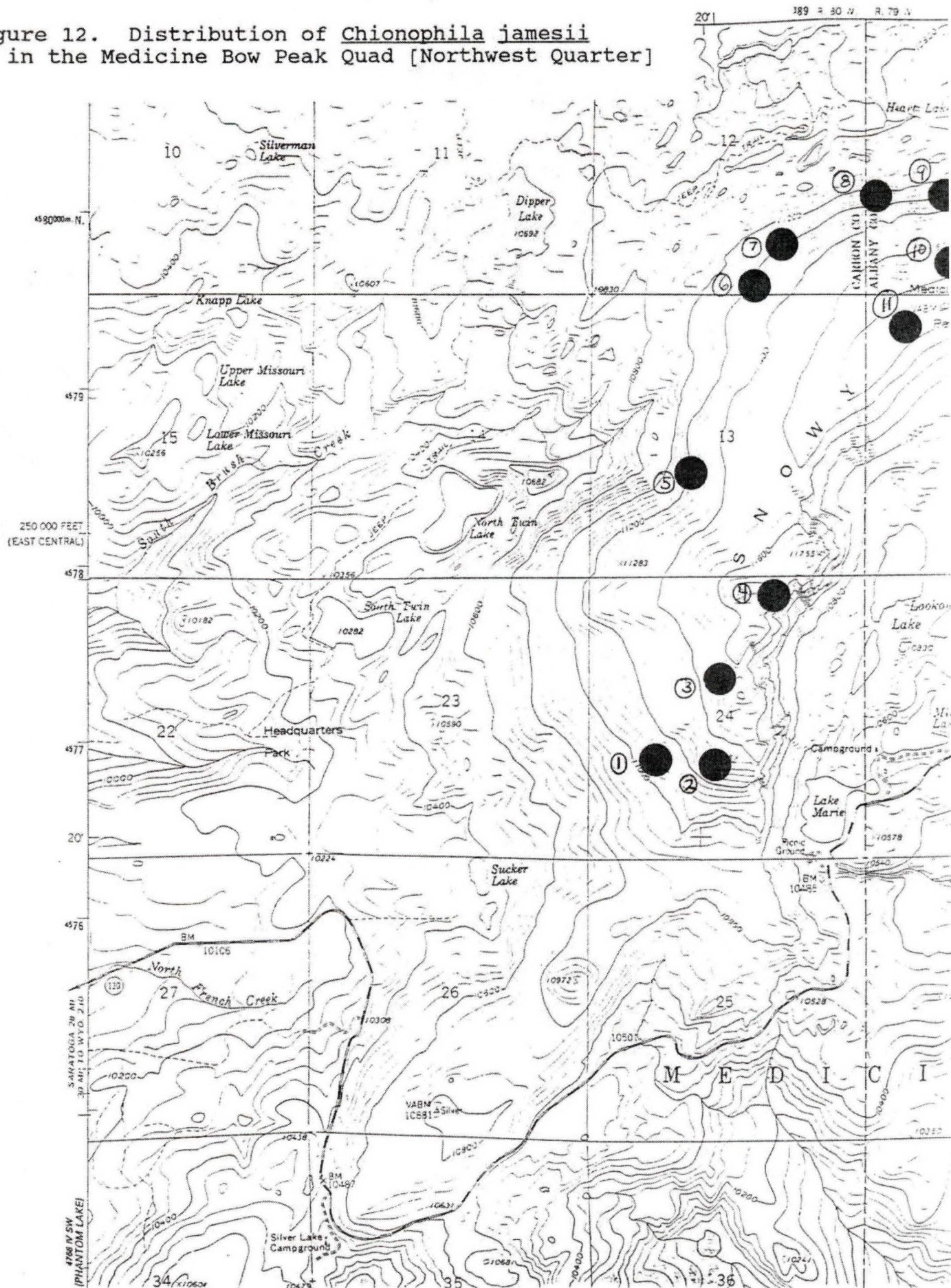
Albany Co.: Along trail to Gap Lakes near Brooklyn Ridge. Rocky soil. Elev. 11000 ft. 10 August 1959. Wetherell 172 (RM).

Albany Co.: SE-facing slope below snowfield on Browns Peak (T16N R79W S2). Elev. 10950 ft. 21 July 1991. Bynum 182 (CWC)

Albany Co.: Slopes below Lost Pond (T16N R79W S10). Elev. 10920 ft. 24 June 1991. Haines 8402 (CWC).

Albany Co.: First mafic dike W of mafic dike near top of trail up ridge E of East Glacier Lake (T16N R79W S3 NE4 of SE4). Elev. 11000 ft. 9 July 1991. Haines 9111 (CWC).

Figure 12. Distribution of Chionophila jamesii  
in the Medicine Bow Peak Quad [Northwest Quarter]





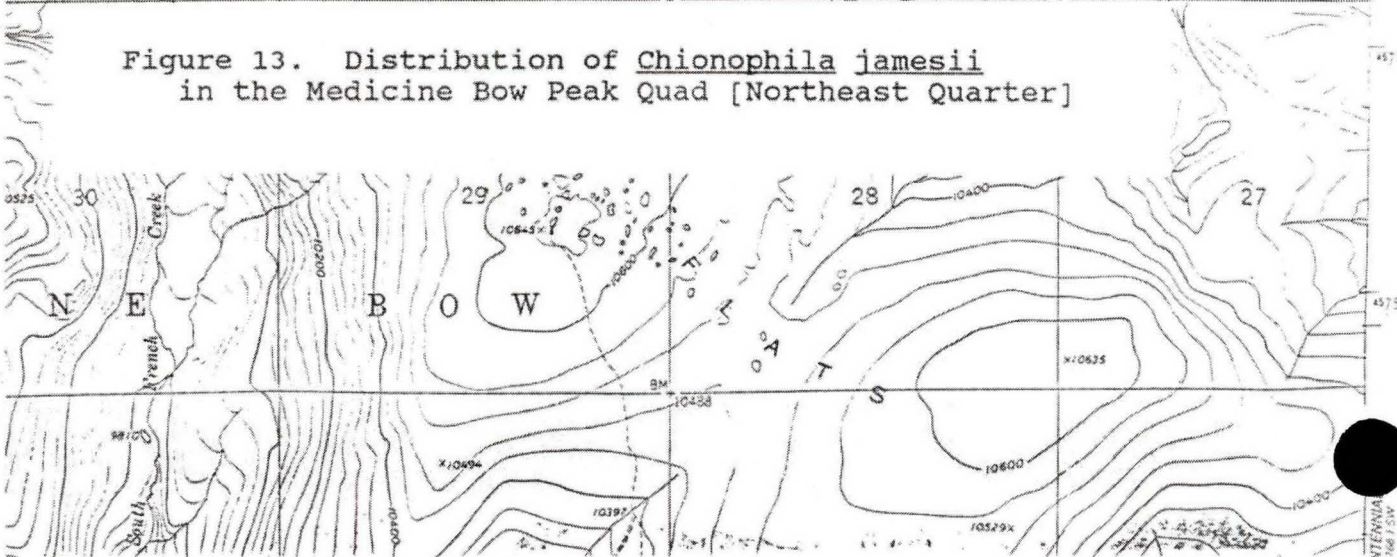
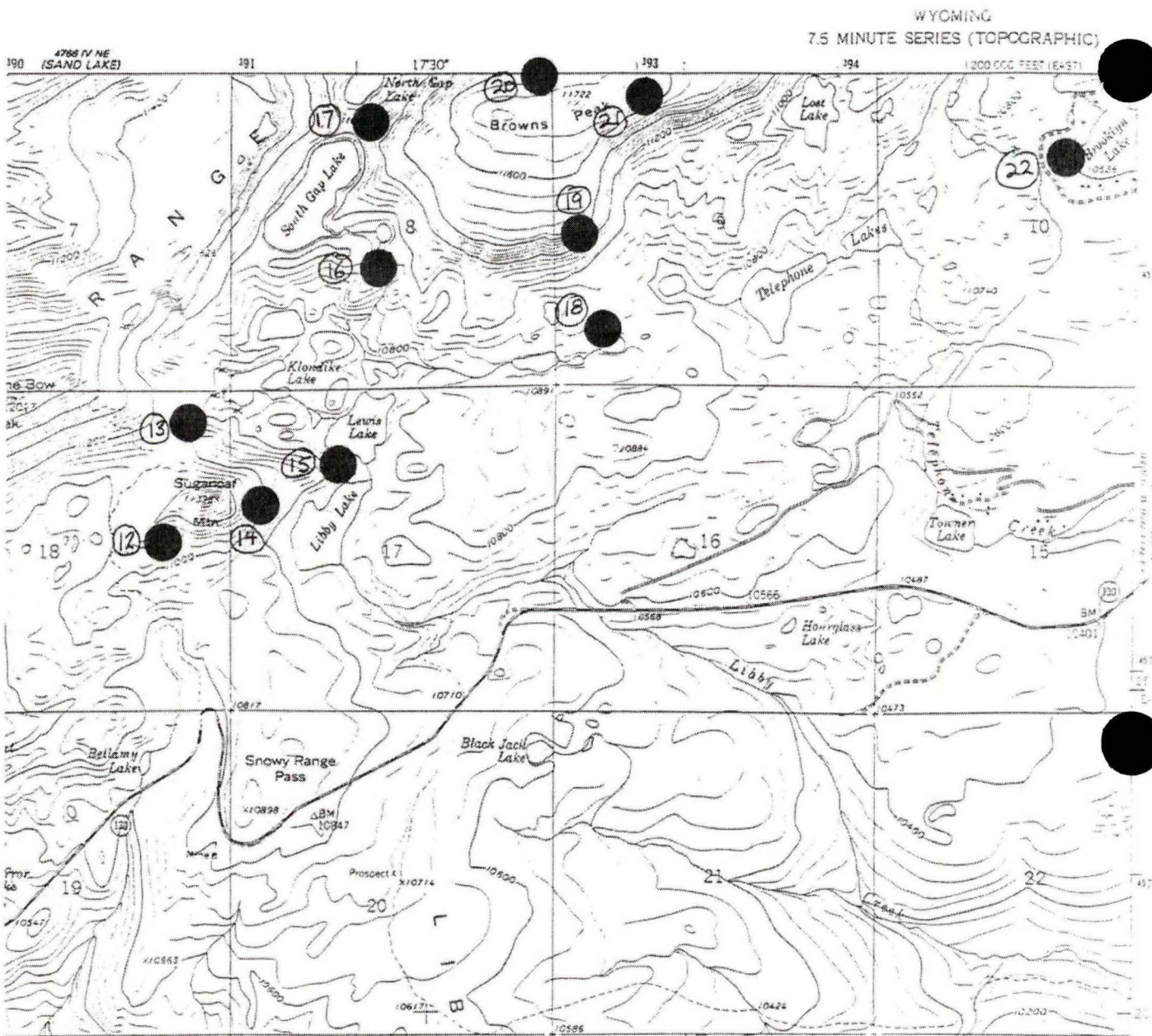
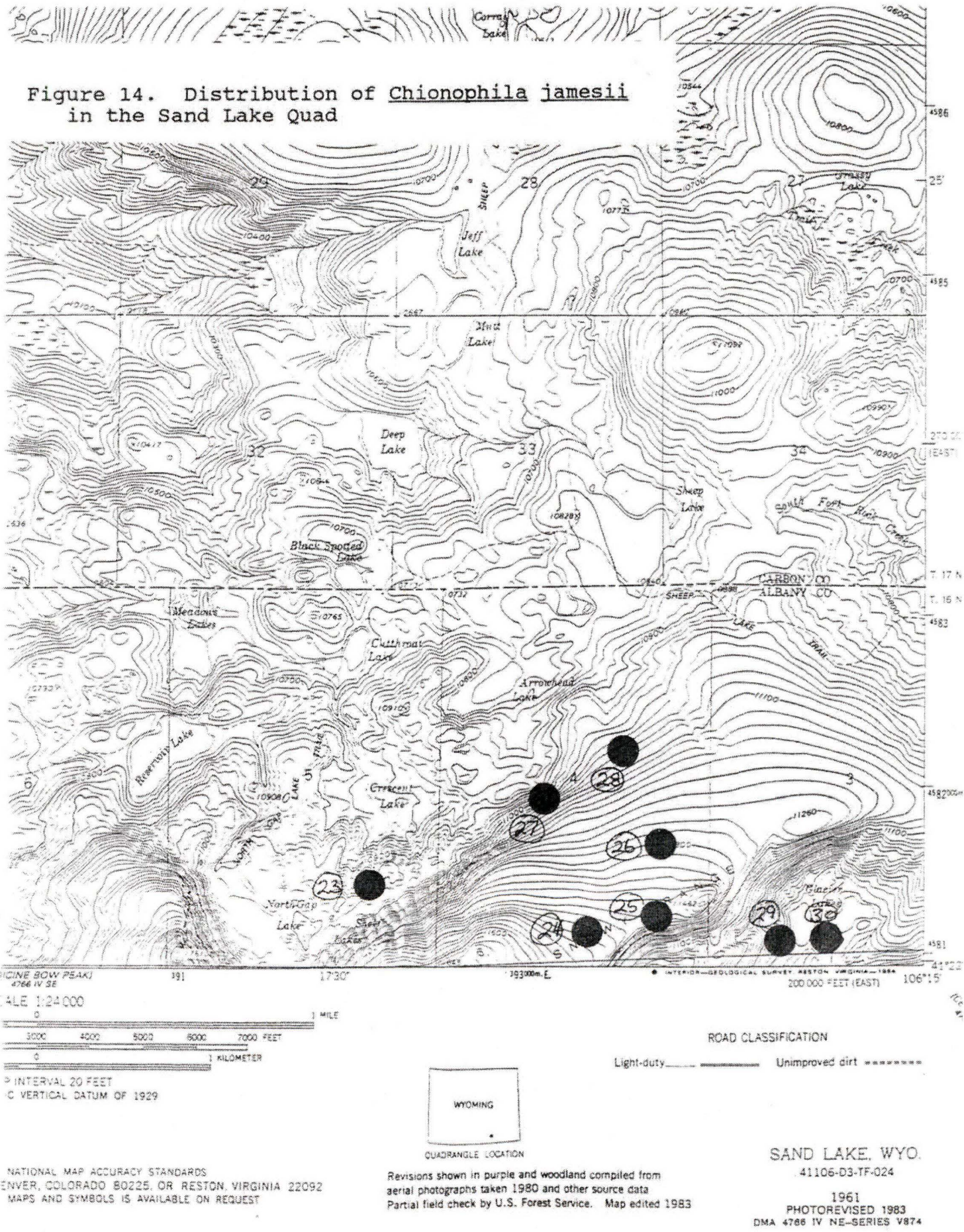




Figure 14. Distribution of Chionophila jamesii in the Sand Lake Quad





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*Erigeron melanocephalus* (A. Nels.) A. Nels.  
BLACKHEADED DAISY  
Asteraceae or Compositae (Aster family)

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**Federal Status:** None

**Natural Heritage Rank:** Wyoming: G3/S2  
Utah: G3/S1

**Description:** Blackheaded daisy is a perennial herb with a woody rootstalk and hairy stems 5-15 cm tall. The leaves are predominantly basal, entire, and have stiff, coarse hairs on the margins. Basal leaves are spoon-shaped and petiolate, while the few stem leaves are narrow and linear. Flower heads are solitary and contain 50-70 white (occasionally pink), spreading rays 7-11 mm long and over 1 mm wide. The involucre is covered with a densely woolly mat of crinkly, multi-celled hairs with conspicuous purple or black cross-walls (readily apparent with a 10x hand lens) (Harrington 1954; Dorn 1992).

**Similar Species:** Alpine daisy (*Erigeron simplex*) has woolly involucre hairs with clear crosswalls and has glandular stems below the flower heads. Arctic-alpine daisy (*E. humilis*) has similar dark-colored involucre hairs but has ray flowers 3-7 mm long and less than 1 mm wide. Immature specimens of *E. melanocephalus* (with the ray flowers not completely elongated) can be confused with *E. humilis*. *E. elatior* can be distinguished by its broad, ovate stem leaves over 1 cm wide (Dorn 1992).

**Flowering/Fruiting Period:** July-September.

**Habitat:** Dry to moist subalpine meadows, parks, and slopes (Nelson 1984), often at the edge of coniferous woods. Weber (1987) notes that blackheaded daisy is usually found on moister sites where it occurs with alpine daisy. Elevation 10400-11300 feet.

**Global Distribution:** Found in the higher mountains from southern Wyoming to Utah and New Mexico (Harrington 1954). In Wyoming, it is restricted to the Sierra Madre and Medicine Bow mountains (RM and WYNDD records).

**Population Size/Distribution in Medicine Bow NF:** In 1993, this species was documented from 32 sites on the lower slopes of Medicine Bow Peak, Sugarloaf, and Browns Peak, and from the subalpine lake country north of Browns Peak. In all, it is known from over 40 sites in the Medicine Bow mountains. Populations ranged in size from less than 10 plants to an estimated 20,000-25,000 individuals. At many sites, it was one of the dominant

forb species. Populations were best developed on moist, but well-drained meadow sites at the edge of conifer woods. Plants were typically absent from rocky areas and high summits.

**Existing or Potential Threats:** Potentially threatened by livestock grazing (von Ahlefeldt 1993). Populations at lower elevations could be threatened if subalpine timber stands are harvested.

**Remarks:** Blackheaded daisy is locally abundant in the Snowy Range and has been reported as "one of the most common dwarf daisies" in the subalpine zone in Colorado by Weber (1987). Nonetheless, the small global range of this species makes it potentially vulnerable to large scale habitat loss.

Figure 15. Line drawing of Erigeron melanocephalus x 1 (by the author)

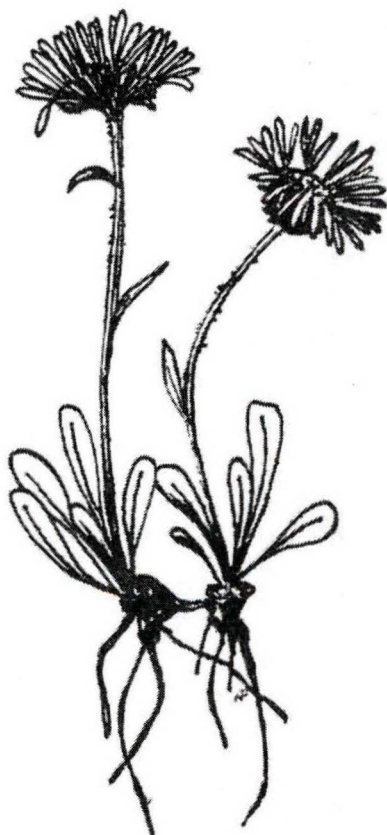




Table 5  
Snowy Range Collection Sites for  
Erigeron melanocephalus

I. 1993 Survey Sites

A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 16)

1. Carbon Co.: South slope of Silver Peak, ca 0.25 mi N of WY Hwy 130, ca 0.5 mi NNE of Silver Lake (T16N R80W S35 NE4 of NW4). Open rocky meadow at base of quartz talus slope and edge of Engelmann spruce woods. With Juncus, Vaccinium cespitosum, Viola adunca, Ranunculus alismifolius var. montanus. Elev. 10800 ft. 7 August 1993.

Abundant on sites with rocky, relatively dry soils and low vegetative cover. Absent where cover is greater than 90%. Vegetative plants observed on wetter sites of suitable habitat where snow has only recently been melted.

2. Carbon Co.: Ridge on north side of WY Hwy 130, ca 0.3 mi E of Silver Peak, ca 1.25 mi SW of Lake Marie (T16N R80W S26 SE4 of SE4). Quartz talus slope at edge of Engelmann spruce grove. Soil gravelly/rocky with patches of well-developed lichens. Understory with Sibbaldia procumbens, Vaccinium scoparium, Erigeron peregrinus, Potentilla diversifolia. Elev. 10680 ft. 7 August 1993.

Occasional in small openings among spruce trees. Probably fewer than 100 plants in area of 2 acres.

3. Carbon Co.: Bench midway between Mount 10972 and Silver Peak, on SW flank of Medicine Bow Peak massif, ca 0.5 mi S of Sucker Lake (T16N R80W S26 NW4 of SE4). Open, Phleum/Deschampsia meadow with abundant Potentilla diversifolia and Senecio dimorphophyllus. Soil moist, but well drained with very high vegetative cover. Elev. 10700 ft. 7 August 1993.

Extremely common with an estimated population of 20,000-25,000 plants over ca 40 acres of suitable habitat. Second only to Potentilla diversifolia in total abundance. Common everywhere except on wetter, more poorly drained microhabitats dominated by Caltha and Trollius. Fertig 14294 (RM).

4. Carbon Co.: East slope of Mount 10972, ca 0.25 mi N of WY Hwy 130, ca 1 mi SW of Lake Marie (T16N R80W S25 SW4 of NW4). Flat, gravelly soiled bench at timberline. With Vaccinium scoparium, Sibbaldia procumbens, Poa cusickii var. epilis, Erythronium grandiflorum. Elev. 10800 ft. 7 August 1993.



Very common on patches of bare, recently disturbed soil scattered among rocks. Also found at very base of quartz boulder slope.

5. Carbon Co.: Southwest flank of low hill on north side of WY Hwy 130, ca 0.75 mi SSW of Lake Marie, ca 1 air mi NE of Silver Peak (T16N R80W S25 NE4 of SW4). Semi-open Engelmann spruce grove and adjacent mesic, open canopy meadow. Understory with Vaccinium scoparium, Sibbaldia procumbens, Juncus drummondii. Elev. 10600 ft. 7 August 1993.

Most abundant on well drained, open canopy sites, although also present in partial shade below spruces. Soil well developed gravelly-loam. Fertig 14271 (RM).

6. Carbon Co.: South flank of Medicine Bow Peak massif, 0.1 mi SW of Lake Marie, ca 0.1 mi W of WY Hwy 130 (T16N R80W S25 NW4 of NE4). East-facing slope with moist well-developed soil and scattered quartzite rocks. Open meadow in small clearing of Engelmann spruce woods with Vaccinium scoparium, Sibbaldia procumbens, Poa cusickii var. epilis, Erigeron peregrinus. Elev. 10700 ft. 6 August 1993.

Widely scattered in woods, but extremely common in open meadow and along side of trail to Medicine Bow Peak. Absent or only immature plants found on sites where soil is very moist. Woodland populations occupy areas with low vegetative cover, but with abundant mosses and lichens.

9. Carbon Co.: West slope of Medicine Bow Peak massif, ca 1 mi E of South Twin Lake, ca 0.75 mi W of Lookout Lake (T16N R80W S24 NW4 of NW4). West-facing slope and grassy meadow at edge of boulder field and among open grove of Engelmann spruce. Understory with Vaccinium scoparium, Senecio dimorphophyllus, Antennaria umbrinella, Erigeron peregrinus. Elev. 11300 ft. 6 August 1993.

The dominant forb at this site, with 2000-3000 plants in ca 2 acres (more suitable habitat in vicinity). On rocky soil with well developed lichen and cryptogam layer. Plants in full flower.

10. Carbon Co.: West slope of Medicine Bow Peak, ca 0.6 mi W of summit, ca 1.75 mi N of Lake Marie (T16N R80W S12 SW4 of SE4). West-facing rock outcrops with patches of Geum rossii turf meadows and thickets of Salix glauca. Elev. 11200 ft. 6 August 1993.

Locally common in small meadow dominated by Vaccinium scoparium and Geum rossii. Occurs on open soil with well developed cryptogamic crusts. With Erigeron simplex, Deschampsia cespitosa, Polygonum bistortoides.



11. Carbon Co.: West slope of Medicine Bow Peak, ca 0.5 mi WNW of summit, ca 0.4 mi S of Heart Lake (T16N R80W S12 NW4 of SE4 of SE4). Rocky, west-facing slope with large patches of Geum rossii/cushion plant meadow interspersed with boulder fields. Elev. 11200 ft. 6 August 1993.

Widely scattered and uncommon on open, moist, grassy flats and slopes. With Sibbaldia procumbens, Carex scopulorum, Erigeron simplex, Lewisia pygmaea. Most plants with ray flowers still elongating, resembling E. humilis in aspect.

**B. Medicine Bow Peak Quad [Northeast Quarter] (Figure 17)**

12. Albany Co.: Libby Flats; adjacent to two-track road to Nelson Park, ca 0.75 mi S of WY Hwy 130 (T16N R79W S20 SW4 of SE4). Open, mesic meadow dominated by Phleum and Deschampsia. With Erigeron simplex, Senecio dimorphophyllus, Trifolium parryi, Artemisia scopulorum. Elev. 10600 ft. 7 August 1993.

Very common in area of ca 0.5 acres, forming dense colonies (estimated 800-1000 plants). Absent or very rare from adjacent sites with abundant Geum rossii, Erigeron peregrinus, or E. simplex. Trampling by vehicles traveling off the designated road may be a threat.

13. Albany Co.: Libby Flats; rock outcrops due S of lookout tower, ca 0.1 mi S of WY Hwy 130 (T16N R79W S20 SE4 of NW4). Alpine meadow at base of sandstone rock outcrop and grove of krummholz and flag Engelmann spruce. With Sibbaldia procumbens, Deschampsia cespitosa, Artemisia scopulorum, Erigeron simplex. Elev. 10800 ft. 7 August 1993.

Ca 200 plants observed in 0.5 acre area on gentle, south-facing slope.

14. Albany Co.: South slope of Sugarloaf Mountain on east side of ridge extending SW from Sugarloaf to Lookout Lake (T16N R79W S18 NW4 of SE4). Base of rock wall and rocky, gravelly basin at toe of mountain. Elev. 11100 ft. 28 July 1993.

Local in small openings in grove of Engelmann spruce. With Vaccinium scoparium, Salix glauca, Sibbaldia procumbens. Soil semi-moist with well developed cryptogammic crust. Absent from densely shaded areas among trees.

15. Albany Co.: Low ridge less than 0.25 mi SW of Libby Lake, 0.25 mi SE of summit of Sugarloaf Mountain (T16N R79W S17 NW4 of SW4). Scattered clearings in forest of subalpine fir and Engelmann spruce. Soil sandy-gravelly with bare spots covered by lichens and Selaginella. Understory of Vaccinium scoparium, Sibbaldia procumbens, and sapling conifers. Elev. 10800 ft. 28 July 1993.



Clusters of 2-5 plants widely scattered throughout clearings. Much less common than Erigeron peregrinus or E. simplex at this site.

16. Albany Co.: Libby Creek, adjacent to campground road SE of outlet of Libby Lake, ca 0.5 mi SE of summit of Sugarloaf Mountain (T16N R79W S17 NE4 of SW4). Edge of Engelmann spruce grove and wet meadow/willow thicket. Elev. 10700 ft. 28 July 1993.

148 plants observed in area of ca 400 sq ft in semi-open, dry clearing. With Viola adunca, Phleum alpinum, Trifolium parryi, Artemisia scopulorum. Growing in needle duff.

19. Albany Co.: North shore of Libby Lake, between Libby and Lewis Lakes, ca 0.5 mi NW of WY Hwy 130 (T16N R79W S17 SE4 of NE4 of NW4). South-facing quartz rock outcrop with bare, sandy-gravel soil pockets and numerous cracks and ledges. With Aquilegia coerulea, Antennaria umbrinella, Trifolium dasyphyllum. Elev. 10700 ft. 28 July 1993.

Found among quartz rocks lining small, dry stream channel at base of rock outcrop. Also found on upper, drier slopes above wet Caltha/Salix planifolia meadow. With Erigeron peregrinus, E. simplex, Sibbaldia procumbens and Vaccinium cespitosum. Fertig 14204 (RM).

20. Albany Co.: Lewis Lake trail, ca 0.2 mi E of South Gap Lake, ca 0.4 mi N of Lewis Lake at SW toe of Browns Peak (T16N R79W S8 NE4 of SW4). Gravelly, W-facing slope of Geum turf below low rock outcrop and krummholz of Engelmann spruce and subalpine fir. Elev. 10900 ft. 4 August 1993.

Ca 200 plants on gravelly openings and in open, grassy areas upslope of saturated snow-melt meadows. With Artemisia scopulorum, Erigeron simplex, Silene acaulis, Luzula spicata.

21. Albany Co.: Ridge between south bank of North Gap Lake and north bank of South Gap Lake, in saddle between massif of Medicine Bow Peak and Browns Peak (T16N R79W S8 NE4 of NW4). Quartz boulder outcrop and rock field with shelves of Geum turf and some bare soil. Soil moist from recent snow melt. Elev. 11000 ft. 4 August 1993.

Scattered on well-drained, open grassy shelves with well developed cryptogammic crust soils. With Artemisia scopulorum, Geum rossii, Juncus drummondii.

22. Albany Co.: East side of large lake ca 0.3 mi SW of Telephone Lakes, ca 0.3 mi S of south slope of Browns Peak (T16N



R79W S16 NE4 of NW4). Edge of ribbon forest of Engelmann spruce and subalpine fir in grassy quartzite rock field. With Vaccinium cespitosum, Hieracium gracile, Potentilla diversifolia. Elev. 10800 ft. 27 July 1993.

Widely scattered, largest clump containing 10 individuals in partial shade. Fertig 14175 (RM).

23. Albany Co.: Chain of lakes ca 0.25 mi S of south slope of Browns Peak, ca 0.5 mi W of Telephone Lakes (T16N R79W S9 SW4 of SW4). Wet meadow of Caltha leptosepala, Trollius laxus, Ranunculus alismifolius, Salix planifolia var. monica surrounded by unmelted snow drifts. Elev. 10880 ft. 27 July 1993.

Locally common on sandy, E-facing sunny slope below clump of subalpine fir/mountain gooseberry.

24. Albany Co.: Northwest bank of Telephone Lakes, ca 1 mi N of WY Hwy 130 (T16N R79W S9 NW4 of SE4). Open, wet meadow with thickets of Salix planifolia and scattered Picea engelmannii. Elev. 10800 ft. 27 July 1993.

Found on mounded earth and, less frequently, in low, wet depressions between mounds. With Erigeron peregrinus. Absent from wet sites below melting snow drifts dominated by Caltha, Trollius, and Ranunculus alismifolius.

#### C. Sand Lake Quad (Figure 18)

27. Albany Co.: North bank of Upper Shelf Lake at toe of north slope of Browns Peak, ca 0.25 mi NE of North Gap Lake (T16N R79W S5 NW4 of SE4 of SE4). Gravelly slope with isolated patches of Geum rossii turf. Overall vegetative cover low. Soil thin, sandy-gravel with well developed cryptogamic crusts. Elev. 11000 ft. 4 August 1993.

Moderately common on grassy, east-facing meadow slopes near edge of Engelmann spruce krummholz. Soil well-drained.

28. Albany Co.: North banks of pair of small, unnamed lakes at toe of north face of Browns Peak, ca 0.25 mi S of Arrowhead Lake (T16N R79W S4 SE4 of NW4). Rocky, open Geum turf community at tree line. Soil sandy, dry. Elev. 10900 ft. 2 August 1993.

Moderately common on dry rocky soil. With Artemisia scopulorum, Polygonum bistortoides, Erigeron simplex.

29. Albany Co.: North slope of Browns Peak due E of unnamed pair of lakes at toe of mountain, ca 0.25 mi S of Arrowhead Lake (T16N R79W S4 NE4 of SW4). Rocky slope with patches of bare, moist soil and thickets of Salix glauca and Picea engelmannii. Elev. 11000 ft. 2 August 1993.

Restricted to open, semi-moist clearings in spruce krummholz below talus slope.

30. Albany Co.: North slopes of Browns Peak, ca 0.25 mi ESE of Arrowhead Lake (T16N R79W S4 SW4 of NE4). Salix planifolia var. monica community in rocky depression with scattered snow melt ponds. Elev. 11050 ft. 2 August 1993.

Locally common on relatively moist, snow melt slopes and depressions, but absent from wetter sites dominated by Caltha and Deschampsia. With Artemisia scopulorum, Sibbaldia procumbens, Geum rossii, Salix cascadiensis. Fertig 14225 (RM).

33. Albany Co.: N bank of Arrowhead Lake, ca 0.75 mi SE of Deep Lake, ca 0.5 mi N of north face of Browns Peak (T16N R79W S4 NW4 of NW4). Semi-moist but well-drained grassy meadow at edge of subalpine fir/Engelmann spruce grove. With Polygonum bistortoides, Ranunculus alismifolius, Trifolium parryi. Elev. 10800 ft. 2 August 1993.

Widely scattered but locally abundant, especially on both banks of outlet stream. Ca 500 plants observed in one plot of 100 sq ft. On flats and gentle slopes. Absent from adjacent moist Caltha/Deschampsia meadows. Fertig 14218 (RM).

34. Carbon Co.: Uplands due E of Black Spotted Lake, ca 0.5 mi S of Deep Lake (T17N R79W S32 SE4 of SE4). Open meadow with numerous small ponds. Elev. 10700 ft. 2 August 1993.

Mostly confined to moist, but well-drained hummocks and upland slopes at edge of Engelmann spruce woods. Widely scattered with Sibbaldia procumbens, Polygonum bistortoides, Senecio dimorphophyllus.

35. Carbon Co.: West shore of Deep Lake, ca 1.75 mi N of north face of Browns Peak (T17N R79W S32 SE4 of NE4). Semi-dry, open meadow at edge of Engelmann spruce grove and along lakeshore. Elev. 10500 ft. 2 August 1993.

Ca 1000 plants observed on slightly drier hummocks adjacent to lake and upslope along trail to Arrowhead Lake. Scattered plants found on wetter soil on lakeshore. Absent from lower, wetter sites dominated by Caltha.

36. Carbon Co.: Deep Creek, ca 0.25 mi NW of outlet of Deep Lake, ca 2.5 mi E of Pine Butte (T17N R79W S32 NW4 of NE4). Subalpine fir forest with understory of Arnica cordifolia, Vaccinium scoparium, Juncus balticus. Elev. 10350 ft. 2 August 1993.



Moderately common but scattered on humus soil along trail in moist, rocky woods. Found in deep or partial shade. Absent from adjacent open, semi-moist meadows.

37. Carbon Co.: Ridge midway between Deep and Sheep Lake, ca 1.25 mi N of north face of Browns Peak (T17N R79W S33 center). Ridge adjacent to rocky Salix planifolia var monica/Senecio triangularis thicket at edge of Picea engelmannii/Ribes montigenum grove. Elev. 10650 ft. 3 August 1993.

Widely scattered in openings in partial shade of spruce trees. Uncommon. With Polygonum bistortoides, Trifolium parryi.

38. Carbon Co.: West slope of Mount 11092, ca 0.25 mi N of Sheep Lake, ca 0.5 mi E of Mutt Lake (T17N R79W S33 SE4 of NE4). Open quartzite talus and rock fields on south-facing slope with scattered grassy openings at edge of subalpine fir and Engelmann spruce woods. With Vaccinium scoparium, Antennaria media, Poa, Veronica wormskjoldii. Elev. 10900 ft. 3 August 1993.

Locally common on grassy shelves at tree line and in clearings in woods. Soil with well developed cryptogamic crust. Clumps scattered but usually with 2-7 plants. Also found downslope on disturbed soil. Fertig 14227 (RM).

39. Carbon Co.: Northeast end of Sheep Lake on banks of small stream flowing downstream to Deep Lake, ca 0.75 mi E of Deep Lake (T17N R79W S33 NE4 of SE4). Hummocky terrain within wet meadow of Salix planifolia and Deschampsia cespitosa. Elev. 10800 ft. 3 August 1993.

Common on drier microsites of hummocks and on adjacent slopes at edge of Engelmann spruce grove. Absent from mounds dominated by Antennaria microphylla. With Artemisia scopulorum, Erigeron peregrinus, Polygonum bistortoides.

40. Carbon Co.: East bank of Sheep Lake, 1 mi E of Deep Lake (T17N R79W S34 SW4 of SW4). Open canopy wet meadow with scattered raised hummocks. Elev. 10800 ft. 2 August 1993.

Locally common, but restricted to well-drained hummocks. Absent from moister, water-logged soils of surrounding wet meadow. With Sedum rhodanthum, Sibbaldia procumbens, Trifolium parryi, Potentilla diversifolia.

## II. Historical Collections

### A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 16)

7. Albany Co.: 0.5 mi SE of Mirror Lake (T16N R79W S19). Meadow slope. Elev. 11000 ft. 1 September 1970. Hermann 23431 (RM/USFS).

Slopes S of Mirror Lake (T16N R79W S19). Moist meadow in sparse pine woods. Elev. 10400 ft. 7 August 1965. Feddema 3316 (RM/USFS).

8. Carbon Co.: ca 0.5 mi SE of South Twin Lake, ca 25 air mi ESE of Saratoga (T16N R80W S23). Semi-open, moist Deschampsia-Agrostis meadow at edge of subalpine fir woods and small stream. Elev. 10400 ft. 6 September 1992. Fertig, Jones & White 13456 (RM).

### B. Medicine Bow Peak Quad [Northeast Quarter] (Figure 17)

12. Albany Co.: Libby Flats, 0.75 mi SE of summit on Hwy 130. Alpine meadow. Elev. 10500 ft. 10 August 1959. Finzel 372 (RM).

17. Albany Co.: 13 mi W of Centennial on WY Hwy 130, between the highway and Libby Creek, S of Browns Peak (T16N R79W S17 SE4). Abundant in clay in openings among spruce-fir with Poa and Senecio. Elev. 10600 ft. 6 August 1973. Nelson, B. E. 857 (RM).

18. Albany Co.: above Libby Lake (T16N R79W S17 NW4). Just above timberline. Elev. 10800 ft. 26 September 1982. Evert 5105 (RM).

ca 0.5 mi W of Lewis Lake parking lot on the trail to Medicine Bow Peak, N side of Sugarloaf (T16N R79W S17 NW4). In peaty loam in small meadow with Deschampsia and Poa. Elev. 10700 ft. 2 August 1973. Nelson, B. E. 851 (RM).

25. Albany Co.: West side of Lost Lake, north to northeast facing ridge (T16N R79W S9 NE4). Rock outcrop. Elev. 10980 ft. 19 July 1989. Haines & Regan 7553 (RM).

Lost Lake, S side of western lobe of lake (T16N R79W S9 NE4). Elev. 10940 ft. 26 August 1991. Haines & Hille 10015, 10064 (CWC).

26. Albany Co.: La Plata Mines. 25 August 1898. Nelson, E. 5215 (RM).

Near La Plata Mines. Open subalpine slopes near snow banks. 3 August 1900. Nelson, A. 7882 (RM).



### C. Sand Lake Quad (Figure 18)

31. Albany Co.: Slope just W of West Glacier Lake (T16N R79W S3 South 2). Dry, rocky southeast-facing slope. Elev. 10790 ft. 18 July 1989. Haines & Regan 7529 (RM).

WNW of West Glacier Lake, drainage going up to Lost Pond and Lost Lake (T16N R79W S3 SW4SW4). Elev. 10800-10900 ft. 23 July 1990. Haines 8084 (CWC).

32. Albany Co.: Southeast of east lobe of East Glacier Lake (T16N R79W S3 South 2). East-facing low slope, late snowbank community. Elev. 10780 ft. 18 August 1989. Haines 7825 (RM).

### D. Unmapped Occurrences

Albany Co.: .7 mi N of WY Hwy 130 on Brooklyn Lake Road (T16N R79W S11 SW4). Loamy clay with grass and sedge. Elev. 10300 ft. 15 July 1973. Nelson, B. E. 706 (RM). [Centennial Quad]

Albany Co.: T16N R79W S10. South slope on shallow soil in woodland. Elev. 10500 ft. 30 July 1927. Dunmire 4 (RM/USFS).

Albany Co.: T16N R79W S18. South slope on gravel soil in parkland. Elev. 11500 ft. 1 August 1927. Dunmire 54 (RM/USFS).

Albany Co.: Snowy Range alpine tundra. Dry slope above wet meadow station. Elev. 11,000 ft. 12 July 1955. Bliss 656 (RM). Also 17 July 1954. Bliss 490 (RM).

Albany Co.: Above University of Wyoming Science Camp. Moist, grassy soil. Elev. 10,500 ft. 11 July 1930. Solheim 323 (RM).

Albany Co.: Medicine Bow Mountains. Moist, open woods, subalpine. 15 August 1908. Nelson, A. 9147 (RM).

Albany Co.: Medicine Bow Mountains. Moist parks near timberline. 3 August 1900. Nelson, A. 7882 (RM).

Snowy Range. Ground of receding snow. 31 August 1903. Goodding 2058 (RM).

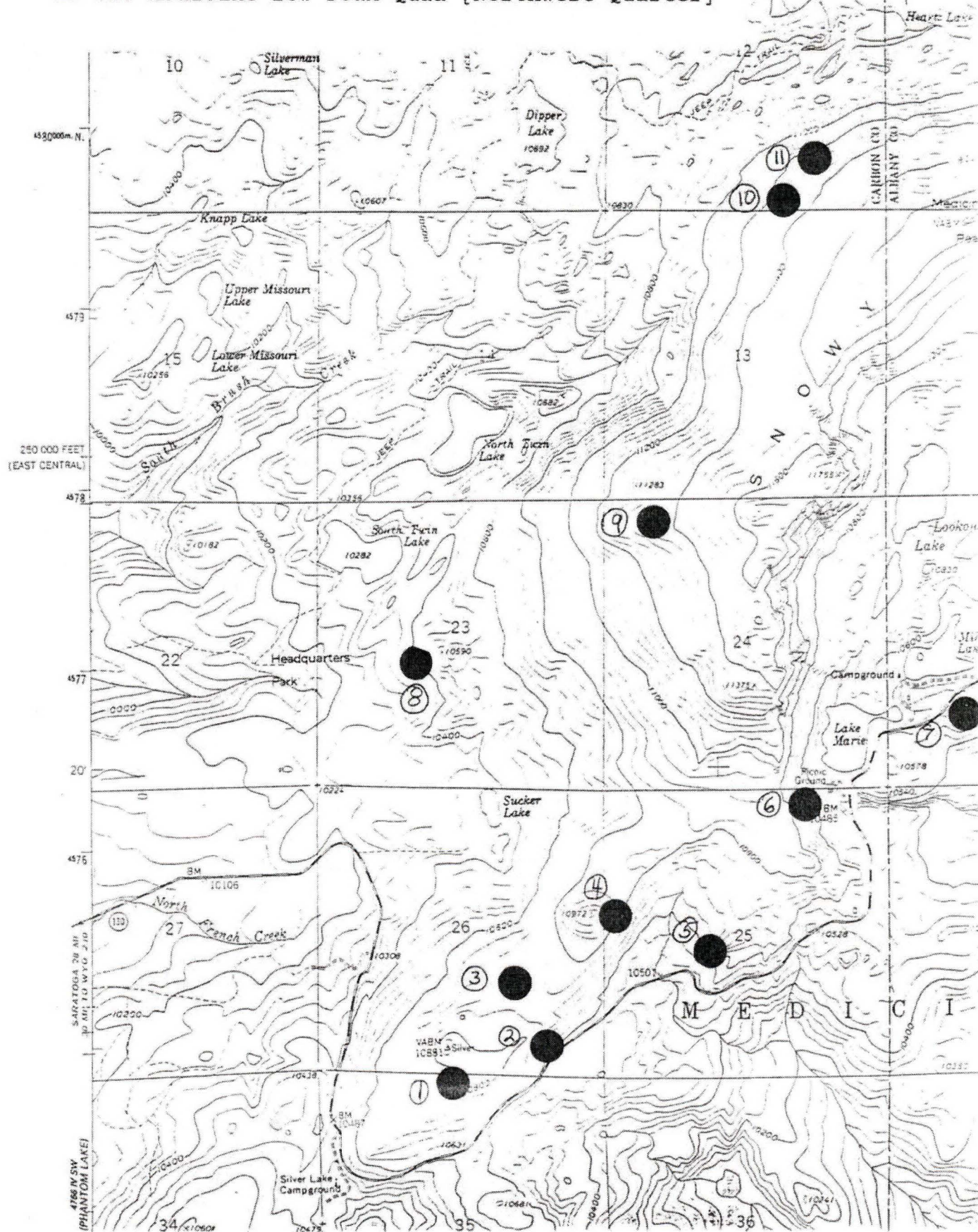
Albany Co.: SE-facing slopes of Browns Peak (T16N R79W S2). Elev. 10950 ft. 21 July 1991. Bynum 187 (CWC).

Albany Co.: Just below summit of Medicine Bow Peak (T16N R79W S18). Elev. 11900 ft. 2 August 1988. Scott 6937 (CWC).

Albany Co.: E of Brooklyn Lake, head of Sheep Lake Trail (T16N R79W S11 NW4). Elev. 10500 ft. 8 July 1991. Haines 9088 (CWC).



Figure 16. Distribution of Erigeron melanocephalus in the Medicine Bow Peak Quad [Northwest Quarter]





4786 IV NE  
(SAND LAKE)

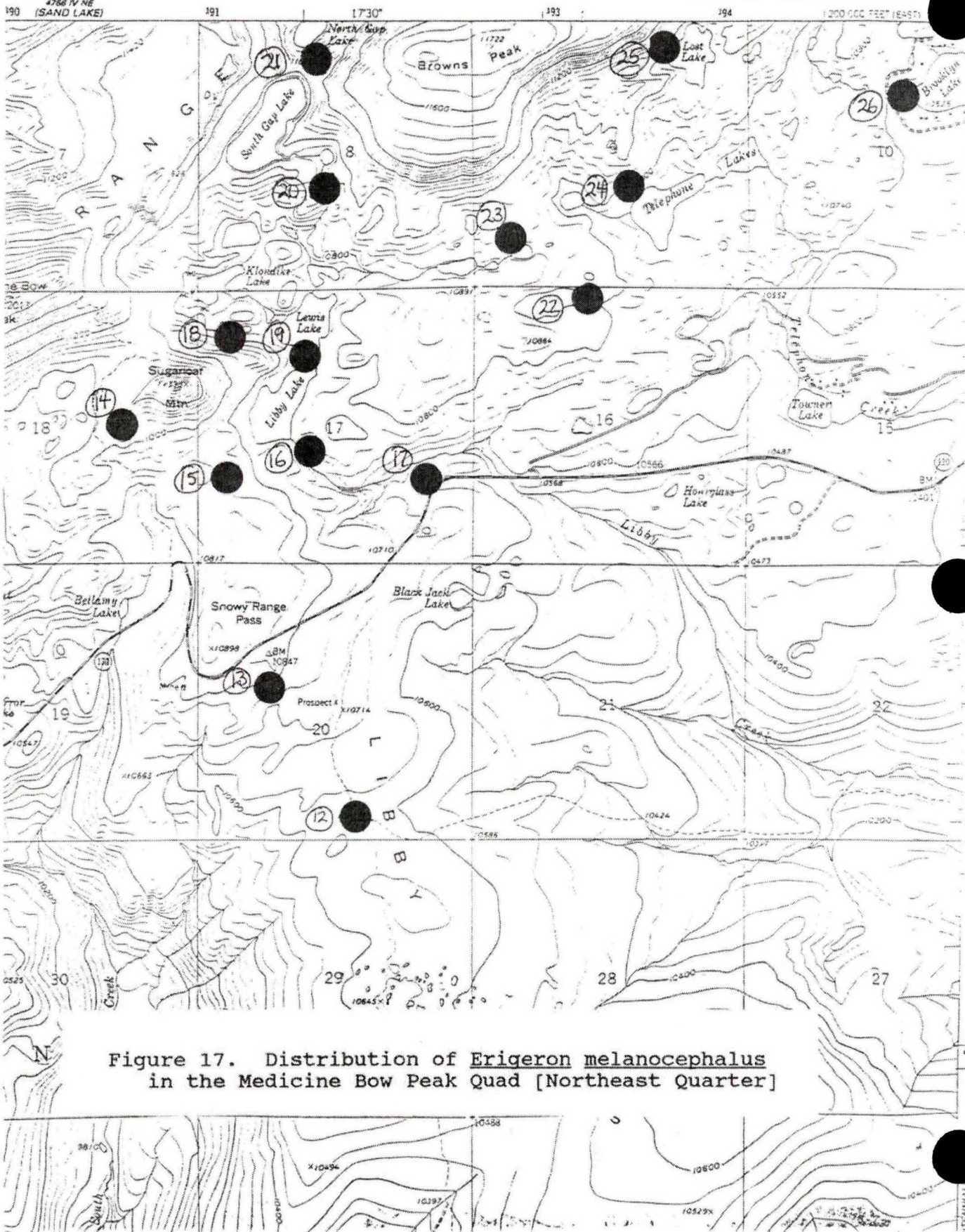


Figure 17. Distribution of *Erigeron melanocephalus* in the Medicine Bow Peak Quad [Northeast Quarter]



Figure 18. Distribution of Erigeron melanocephalus in the Sand Lake Quad

Figure 18. Distribution of Erigeron melanocephalus in the Sand Lake Quad

Map showing the distribution of Erigeron melanocephalus in the Sand Lake Quad, Wyoming. The map includes contour lines, lakes (e.g., Jeff Lake, Deep Lake, Black Spotted Lake, Reservoir Lake, North Gap Lake, Crescent Lake, Arrowhead Lake, Mud Lake, Sheep Lake, Grass Lake, and Lake), and a grid of 30 numbered points (31-60) marked with black dots. The map includes a scale bar (0 to 7000 feet), a north arrow, and a legend for road classification (Light-duty and Unimproved dirt). The map is titled "Figure 18. Distribution of Erigeron melanocephalus in the Sand Lake Quad".

Map details:

- Scale: 1:24,000
- Interval: 20 feet
- Vertical Datum: 1929
- Map Accuracy Standards: National Map Accuracy Standards, Denver, Colorado 80225, or Reston, Virginia 22092
- Revisions shown in purple and woodland compiled from aerial photographs taken 1980 and other source data
- Partial field check by U.S. Forest Service. Map edited 1983
- Map Classification: Light-duty, Unimproved dirt
- Map Title: SAND LAKE, WYO. 41106-D3-TF-024
- Map Date: 1961
- Map Revision: PHOTOREVISED 1983
- Map Series: DMA 4766 IV NE-SERIES V874



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**Erigeron pinnatisectus (A. Gray) A. Nels.**  
**PINNATE FLEABANE**  
**Asteraceae or Compositae (Aster family)**

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**Federal Status:** None

**Natural Heritage Rank:** Wyoming: G3/S2

**Description:** Pinnate fleabane is a perennial herb with a woody rootstalk and hairy or glandular flowering stems 4-12 cm tall. The fern-like basal leaves are pinnately lobed or divided into narrow segments and are glabrous except for the ciliate margins of the petioles. Stem leaves are few, much reduced, and undivided. Flower heads are solitary, with glandular or stiff-hairy involucre 5-8 mm high. Heads contain 40-70 blue, purple, or pinkish ray flowers (Harrington 1954).

**Similar Species:** Cutleaf daisy (Erigeron compositus) has hairy leaves that are once- or twice-ternately divided (arranged in threes).

**Flowering/Fruiting Period:** Late June-September.

**Habitat:** Alpine and upper subalpine rocky slopes, ledges, and meadows. Elevation 10000-12000 ft.

**Global Distribution:** Rocky Mountains from southern Wyoming to northern New Mexico (Duft and Moseley 1989). In Wyoming, it is restricted to the high peaks of the Snowy Range and Sierra Madre in Albany and Carbon Counties (WYNDD records).

**Population Size/Distribution in Medicine Bow NF:** This species was observed at 33 locations on Medicine Bow Peak, Sugarloaf, Browns Peak, and Libby Flats in 1993. It is most abundant on rock outcrops, boulder fields, and talus slopes at high elevations, where it is often one of the dominant forb species. Pinnate fleabane is much less common on sites dominated by alpine meadow vegetation and Geum turfs. In suitable habitat, populations may number from one hundred to several thousand.

**Existing or Potential Threats:** Grazing by livestock may be a threat at lower elevation sites or in more accessible meadow areas (von Ahlefeldt 1993). Higher elevation sites or inaccessible rocky habitats are probably unthreatened. Trampling may be a potential threat in areas of high recreational use.

Figure 19. Line drawing of Erigeron pinnatisectus from Nelson  
(1969)

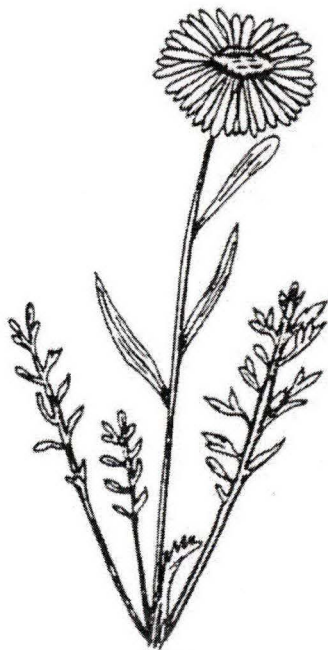




Table 6  
Snowy Range Collection Sites for  
Erigeron pinnatisectus

I. 1993 Survey Sites

A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 20)

1. Carbon Co.: Summit of Mount 10972, ca 0.3 mi N of WY Hwy 130, ca 1 air mi SW of Lake Marie (T16N R80W S26 SE4 of NE4). Open, flat summit of quartz talus boulders with isolated small patches of forbs, Juniperus communis, and Ribes montigenum. Elev. 10970 ft. 7 August 1993.

Common on lichen-encrusted soils on scattered "turf islands" in boulder field. Only found on flat summit, replaced by Erigeron compositus on lower rocky slopes. Ca 200 plants observed. Fertig 14291 (RM).

2. Carbon Co.: Southwest flank of low hill on north side of WY Hwy 130, ca 0.75 mi SSW of Lake Marie, ca 1 air mi NE of Silver Peak (T16N R80W S25 NE4 of SW4). South-facing quartz gravel slope at edge of open Engelmann spruce woods. Elev. 10600 ft. 7 August 1993.

On gravelly soil with Sedum lanceolatum, Antennaria umbrinella, Potentilla diversifolia, Luzula spicata. Plants unusually large and more widely spaced than at many similar sites.

3. Carbon Co.: South flank of Medicine Bow Peak massif, 0.1 mi SW of Lake Marie, ca 0.1 mi W of WY Hwy 130 (T16N R80W S25 NW4 of NE4). East-facing slope with moist well-developed soil and scattered quartzite rocks. Open meadow in small clearing of Engelmann spruce woods with Vaccinium scoparium, Sibbaldia procumbens, Poa cusickii var. epilis, Erigeron peregrinus. Elev. 10700 ft. 6 August 1993.

Scattered in open areas along trail with gravelly soils. With Silene acaulis, Trifolium dasyphyllum, Erigeron simplex. Not common.

4. Carbon Co.: Ridgeline of Medicine Bow Peak massif ca 0.1 mi W of Lake Marie, 0.25 mi W of WY Hwy 130 (T16N R80W S24 SW4 of SE4). Adjacent to trail at edge of quartzite boulder/talus slope. Rock outcrops with scattered Geum rossii/cushion plant turf communities. Elev. 11000 ft. 6 August 1993.

Very abundant on grassy turf ledges among rocks. Habitat covers area of 5-10 acres. Most plants in full flower or beginning to produce fruit.

5. Carbon Co.: Southwest slope of Medicine Bow Peak massif, ca 0.5 mi W of Lake Marie, ca 0.75 mi NE of Sucker Lake (T16N R80W S24 NE4 of SW4). Gravelly opening in quartz boulder field. Soil gravelly-sandy with many bare patches. Dominated by Calamagrostis purpurascens and cushion plants. Elev. 11000 ft. 6 August 1993.

40 flowering and vegetative specimens observed in small opening on gravel soil.

6. Carbon Co.: Southwest flank of Medicine Bow Peak massif, adjacent to Medicine Bow Peak trail, 0.25 air mi W of north shore of Lake Marie (T16N R80W S24 NE4 of SW4). Base of quartz boulder/talus hill and at edge of Picea engelmannii krummholz. Soil moist, gravelly, with some needle duff. Grassy spaces between rocks with Geum rossii, Artemisia scopulorum, Pedicularis parryi, Deschampsia cespitosa. Elev. 11300 ft. 6 August 1993.

Scattered among mats of Geum and cushion plants in boulder field.

7. Carbon Co.: Ridgeline of Medicine Bow Peak massif, ca 0.5 mi SSW of Lookout Peak, ca 0.5 mi NW of Lake Marie (T16N R80W S24 SW4 of NE4). Rocky quartz outcrop and boulder/talus slope on windy ridgeline above snow cornice. Pockets of thin soil among rocks with thick layer of mosses and lichens. Community dominated by cushion plants with scattered Geum rossii and krummholz. Elev. 11400 ft. 6 August 1993.

Widely scattered but very abundant on rock outcrops. 250-300 plants on area of ca 0.5 acres. With Haplopappus pygmaeus, Silene acaulis, Paronychia pulvinata. Fertig 14252 (RM).

9. Carbon Co.: Saddle between Lookout Mountain and Medicine Bow Peak, ca 1 mi SW of summit of Medicine Bow Peak, ca 0.5 mi NW of Lookout Lake (T16N R80W S13 SW4 of NE4 of SE4). Wind-blasted ridgecrest in rocky boulder field with scattered turf meadows dominated by Geum rossii, Artemisia scopulorum, and cushion plant communities on gravelly pavement. Elev. 11600 ft. 6 August 1993.

Common, but widely scattered on dry, gravelly, lichen-rich soil. With Saxifraga serpyllifolia var. chrysantha, Erigeron simplex, Polygonum viviparum.

10. Carbon Co.: Ridge ca 0.5 mi SW of summit of Medicine Bow Peak, ca 1 mi W of summit of Sugarloaf Mountain (T16N R80W S13 SE4 of NE4). East-facing upper slope and ridgecrest with rocky quartz outcrops and patches of Geum rossii/Artemisia scopulorum turf. With Besseya wyomingensis, Polemonium viscosum, Phlox pulvinata, Minuartia obtusiloba. Elev. 11640 ft. 6 August 1993.



Common on turf flats amid rock piles.

11. Albany Co.: Boulder pile on ridgeline due S of summit of Medicine Bow Peak, ca 1 mi W of Lewis Lake (T16N R79W S18 NW4 of NW4). Base of quartzite boulder hill and rocky, flat alpine meadow dominated by Geum rossii and cushion plants. With Eritrichium nanum, Phlox pulvinata, Saxifraga rhomboidea, Festuca brachyphylla. Elev. 11900 ft. 6 August 1993.

Common, but widely scattered on flats.

**B. Medicine Bow Peak Quad [Northeast Quarter] (Figure 21)**

12. Albany Co.: Libby Flats; Grounds immediately surrounding lookout tower on south side of WY Hwy 130, ca 0.75 mi S of Libby Lake (T16N R79W S20 NW4 of SE4 of NW4). Brownish sandstone boulders and gravel at edge of krummholz vegetation. With Oxytropis, Silene acaulis, Geum rossii, Minuartia obtusiloba. Elev. 10840 ft. 7 August 1993.

13. Albany Co.: South slope of Sugarloaf Mountain on east side of ridge extending SW from Sugarloaf to Lookout Lake (T16N R79W S18 NW4 of SE4). Base of rock wall and rocky, gravelly basin at toe of mountain. Elev. 11100 ft. 28 July 1993.

Found in crevices and shelves in rock wall overlooking basin. In partial shade or full sun with Trisetum spicatum, Juniperus communis, Arenaria congesta.

14. Albany Co.: West slope of Sugarloaf Mountain overlooking saddle of ridge connecting Medicine Bow Peak (T16N R79W S18 SE4 of NE4). Geum turf and sedge mat community on ledges among boulders at foot of loose talus/boulder slope. With Trifolium dasyphyllum, Phlox pulvinata, Erigeron simplex. Elev. 11200 ft. 28 July 1993.

Uncommon at edge of grassy turf and rocks.

15. Albany Co.: Summit of Sugarloaf Mountain, ca 0.25 mi W of Libby Lake (T16N R79W S18 SE4 of NE4). Talus and south-facing boulder slope with scattered pockets of sandy-gravel soil. With Erigeron compositus, Mertensia viridis, Cerastium, Cystopteris fragilis. Elev. 11398 ft. 28 July 1993.

Common on summit and just below. Co-dominant with E. compositus.

16. Albany Co.: East slope of Sugarloaf Mountain along N-S trending ridge downslope of summit (T16N R79W S17 SW4 of NW4). West-facing quartz rock outcrop below large snow field. Elev. 11000 ft. 28 July 1993.

Growing in open at top of ridgeline in rocky, grassy clearing at edge of krummholz. With Polemonium viscosum, Minuartia obtusiloba, Calamagrostis purpurascens, Selaginella.

17. Albany Co.: Ridge on east flank of Sugarloaf Mountain on northwest side of Libby Lake due N of "thumb" of lake (T16N R79W S17 NW4 of SE4 of NW4). Quartz outcrops and rock field on south-facing slope with patches of subalpine fir and Engelmann spruce krummholz. Elev. 10800 ft. 28 July 1993.

Co-dominant with Erigeron simplex and Potentilla diversifolia on open slopes. Several 1000 plants present in area of ca 1 acre. Most in full flower. Occurs with Polygonum viviparum, Phlox pulvinata, Luzula spicata, Cystopteris fragilis. Fertig 14206 (RM).

18. Albany Co.: North shore of Libby Lake, between Libby and Lewis Lakes, ca 0.5 mi NW of WY Hwy 130 (T16N R79W S17 SE4 of NW4). South-facing quartz rock outcrop with bare, sandy-gravel soil pockets and numerous cracks and ledges. With Aquilegia coerulea, Antennaria umbrinella, Trifolium dasyphyllum. Elev. 10700 ft. 28 July 1993.

Over 300 individual plants observed on bare soil and gravel on rock outcrop. One of the dominant forbs at this site. Not found in wet meadow at base of rocks.

19. Albany Co: North slope of unnamed lake on north side of Telephone Creek Rd, ca 0.25 mi N of WY Hwy 130 (T16N R79W S16 SW4 of NE4). Reddish granite outcrops on rocky meadow with scattered krummholz of Engelmann spruce. Meadow with Erigeron simplex, E. compositus, Achillea millefolium, Polemonium viscosum, Eritrichium nanum. Elev. 10680 ft. 27 July 1993.

In 2 small clumps on rocky soil of gentle slope.

20. Albany Co.: Lewis Lake trail, ca 0.2 mi E of South Gap Lake, ca 0.4 mi N of Lewis Lake at SW toe of Browns Peak (T16N R79W S8 NE4 of SW4). Gravelly, W-facing slope of Geum turf below low rock outcrop and krummholz of Engelmann spruce and subalpine fir. Elev. 10900 ft. 4 August 1993.

Very common on ledges of rock outcrop in openings in krummholz. Less abundant upslope where krummholz growth is thicker. With Haplopappus pygmaeus, Phlox pulvinata, Trifolium dasyphyllum, Arctostaphylos uva-ursi.

21. Albany Co.: South toeslope of Browns Peak, ca 1 air mi N of WY Hwy 130 (T16N R79W S9 NW4 of SW4). Dry, rocky clearings among krummholz and large quartz boulders at timberline. With Arctostaphylos uva-ursi, Pedicularis parryi, Haplopappus



pygmaeus, and well-developed cryptogammic crust. Elev. 11000 ft. 27 July 1993.

Common on gravelly, dry soil. Most plants not in flower yet. Fertig 14192 (RM).

22. Albany Co.: South slope of Browns Peak, due N of small lake on section line, ca 1 air mi N of WY Hwy 130 (T16N R79W S8 NE4 of SE4). Steep, S-facing quartz talus slope with large boulders and scattered pockets of grassy turf on consolidated soil. With Silene acaulis, Festuca brachyphylla, Minuartia obtusiloba, Trifolium dasyphyllum. Elev. 11100 ft. 27 July 1993.

Scattered on rocky ledges and terraces. With E. compositus.

23. Albany Co.: Southern rim of Browns Peak plateau, ca 1 air mi N of WY Hwy 130 (T16N R79W S9 NW4 of SW4). Open, S-facing quartz talus slope and Geum turf community at top of steep slope. Elev. 11400 ft. 27 July 1993.

Locally abundant on Geum turf with Paronychia pulvinata, Phlox pulvinata, Erigeron simplex.

24. Albany Co.: S-facing plateau below summit of Browns Peak, ca 0.5 mi E of South Gap Lake (T16N R79W S8 SE4 of NE4). Geum turf communities scattered among quartz rock talus on gentle slopes and flats. Elev. 11500 ft. 27 July 1993.

Locally common on rocky soil associated with talus.

25. Albany Co.: Plateau below summit on west side of Browns Peak, ca 0.25 mi E of South Gap Lake (T16N R79W S8 SW4 of NE4). Rocky tundra on gentle slope dominated by cushion plants and Geum rossii. Elev. 11560 ft. 27 July 1993.

Scattered individuals on Geum turf. Much less common than at rockier sites.

26. Albany Co.: Summit plateau of Browns Peak, ca 0.4 mi E of North Gap Lake (T16N R79W S8 NW4 of NE4 of NE4). Quartz boulder fields with scattered pockets of Geum rossii turf on summit flats. Elev. 11650 ft. 27 July 1993.

Scattered among thick turf of Geum, Trisetum spicatum, and Phlox pulvinata. Uncommon.

27. Albany Co.: North end of plateau at summit of Browns Peak, ca 0.1 mi NW of summit knob (T16N R79W S8 NE4 of NE4 of NE4). Rocky quartz boulder fields with scattered Geum rossii turf and cushion plant communities on alpine flats. Elev. 11680 ft. 27 July 1993.

Low-growing plants, locally common in pockets of Geum turf with Trifolium, Eritrichium, Polemonium viscosum.

28. Albany Co.: Summit plateau of Browns Peak due E of summit knob, ca 1.5 mi N of WY Hwy 130 (T16N R79W S9 NW4 of NW4). Grassy, level plain with mixed community of Calamagrostis purpurascens, Festuca brachyphylla, Poa, Artemisia scopulorum, Potentilla diversifolia. Geum less abundant than at other adjacent sites. Elev. 11700 ft. 27 July 1993.

Widespread over plain.

29. Albany Co.: East slope of Browns Peak on gently sloping plateau below summit, ca 1.5 mi N of WY Hwy 130 (T16N R79W S9 NE4 of NW4). Quartz rock field with scattered grassy Geum meadows interspersed with bare soil. With Silene acaulis, Artemisia scopulorum, Erigeron simplex. Elev. 11600 ft. 27 July 1993.

Widely scattered on rocky soil. Just beginning to flower.

31. Albany Co.: Southeast bank of Lost Lake, ca 1.5 mi N of WY Hwy 130 (T16N R79W S9 SE4 of NE4). Geum rossii turf on ledges and shelves of wide rock outcrop at toe of Browns Peak. Open, flat site with abundant gravel and exposed bedrock. Elev. 10960 ft. 27 July 1993.

Co-dominant at site with Erigeron simplex. Also occurs with Calamagrostis purpurascens, Poa, Minuartia obtusiloba.

#### C. Sand Lake Quad (Figure 22)

33. Albany Co.: Northeast slope of Browns Peak, ca 1 mi W of North Gap Lake (T16N R79W S4 SW4 of SE4). Uneven, rocky terrain with large exposed patches of bare, moist soil, patches of Picea engelmannii krummholz, and dense stands of Salix glauca. Geum cover very low. Elev. 11500 ft. 27 July 1993.

Present on grassier sites with high vegetative cover. With Polygonum viviparum.

34. Albany Co.: Ridgeline overlooking Lost Lake at edge of plateau east of summit of Browns Peak (T16N R79W S4 SE4 of SE4). Quartz boulder slope and Geum rossii/Vaccinium meadow with patches of bare, moist soil and gravel. Elev. 11400 ft. 27 July 1993.

Common on open, rocky sites of mixed quartz and brownish sandstone-like rocks. With Geum, Luzula spicata, Potentilla diversifolia, and well-developed cryptogamic crusts.

35. Albany Co.: South slope of Browns Peak, due NE of Lost Lake (T16N R79W S9 NE4 of NE4 of NE4). Steep, south-facing talus



slope and cliff face with isolated gravelly shelves dominated by cryptogammic crusts, grasses, or juniper. Elev. 11000 ft. 27 July 1993.

Found on level, sunny shelves with Selaginella, Carex, and Trifolium dasyphyllum and in small cracks at base of rock outcrops.

37. Albany Co.: North slope of Browns Peak due E of unnamed pair of lakes at toe of mountain, ca 0.25 mi S of Arrowhead Lake (T16N R79W S4 NE4 of SW4). Rocky slope with patches of bare, moist soil and thickets of Salix glauca and Picea engelmannii. Elev. 11000 ft. 2 August 1993.

Several small subpopulations located among patches of Geum rossii turf and cushion plants among boulder outcrops. Relatively uncommon. Occurs with Phlox pulvinata, Silene acaulis, Erigeron simplex.

## II. Historical Collections

### A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 20)

8. Carbon Co.: Lookout Mountain, Snowy Range. Dry rocky alpine meadow. Elev. 11950 ft. 18 July 1930. Solheim 384 (RM).

Mount 11755 (Lookout Peak), ca 1 mi SW of summit of Medicine Bow Peak, ca 26 air mi ESE of Saratoga (T16N R80W S13 SE4). Alpine tundra and quartzite rock talus. Elev. 11600-11750 ft. 6 September 1992. Fertig, Jones & White 13463 (RM).

11. Albany Co.: Vicinity of Medicine Bow Peak. In rocky soil on gentle slope, alpine. Elev. 11000-11800 ft. 21 July 1957. Beaman and Stone 1395 (RM).

East slope of Medicine Bow Peak. Alpine meadows and fellfields. Elev. 11000-11500 ft. 11 August 1984. Stein 1981 (RM).

### B. Medicine Bow Peak Quad [Northeast Quarter] (Figure 21)

17. Albany Co.: Lewis Lake (T16N R79W S18). Alpine areas near lake. Elev. ca 11100 ft. 8 August 1965. Feddema 3334 (RM/USFS).

Ca 2/3 mi W of Lewis Lake parking lot on the trail to Medicine Bow Peak, N side of Sugarloaf (T16N R79W S17 NW4). Peaty loam in small patches among rocks with Selaginella. Elev. 10800 ft. 2 August 1973. Nelson, B. E. 834 (RM).

18. Albany Co.: Medicine Bow Mountains; Above Libby Lake (T16N R79W S17 NW4). Just above timberline. Elev. 10800 ft. 26 September 1982. Evert 5108 (RM).

30. Albany Co.: West side of Lost Lake on north to northeast facing ridge (T16N R79W S9 NE4). Rock outcrop. Elev. 10980 ft. 19 July 1989. Haines & Regan 7564 (RM).

32. Albany Co.: La Plata Mines. Elev. 11000 ft. 23 August 1895. Nelson, A. 1816 (RM).

#### C. Sand Lake Quad (Figure 22)

36. Albany Co.: East side of East Glacier Lake (T16N R79W S3 South 4). Dry, rocky west-facing slope. Elev. 3300 msm. 13 July 1988. Haines 7289 (RM).

#### D. Unmapped Occurrences

Albany Co.: 0.75 mi NW of WY Hwy 130 on Brooklyn Lake Road, NE of Little Brooklyn Lake (T16N R79W S11 SW4). Stony meadow with Phlox, Geum, Potentilla. Elev. 10,300 ft. 1 July 1973. Nelson, B. E. 587 (RM). [Centennial Quad]

Albany Co.: Near Little Brooklyn Lake. Stony ledges and ridges. 29 June 1934. Nelson, R. A. 1111 (RM). [Centennial Quad]

Albany Co.: Brooklyn Lake (T16N R79W S11 NW4). Abundant in sandy loam with Polygonum, Erigeron, Arenaria, and Geum. Elev. 10500 ft. 15 July 1973. Nelson, B. E. 711 (RM). [Centennial Quad]

Albany Co.: Medicine Bow Mountains. Stony alpine slopes. 2 August 1900. Nelson, A. 7854 (RM).

Albany Co.: Near University of Wyoming Science Camp. Rocky soil. Elev. 10000 ft. 19 June 1930. Solheim 139 (RM).

Albany Co.: 4 mi W of Brooklyn Lodge. Wet rock ledges. 27 July 1934. Nelson, R. A. 1112 (RM).

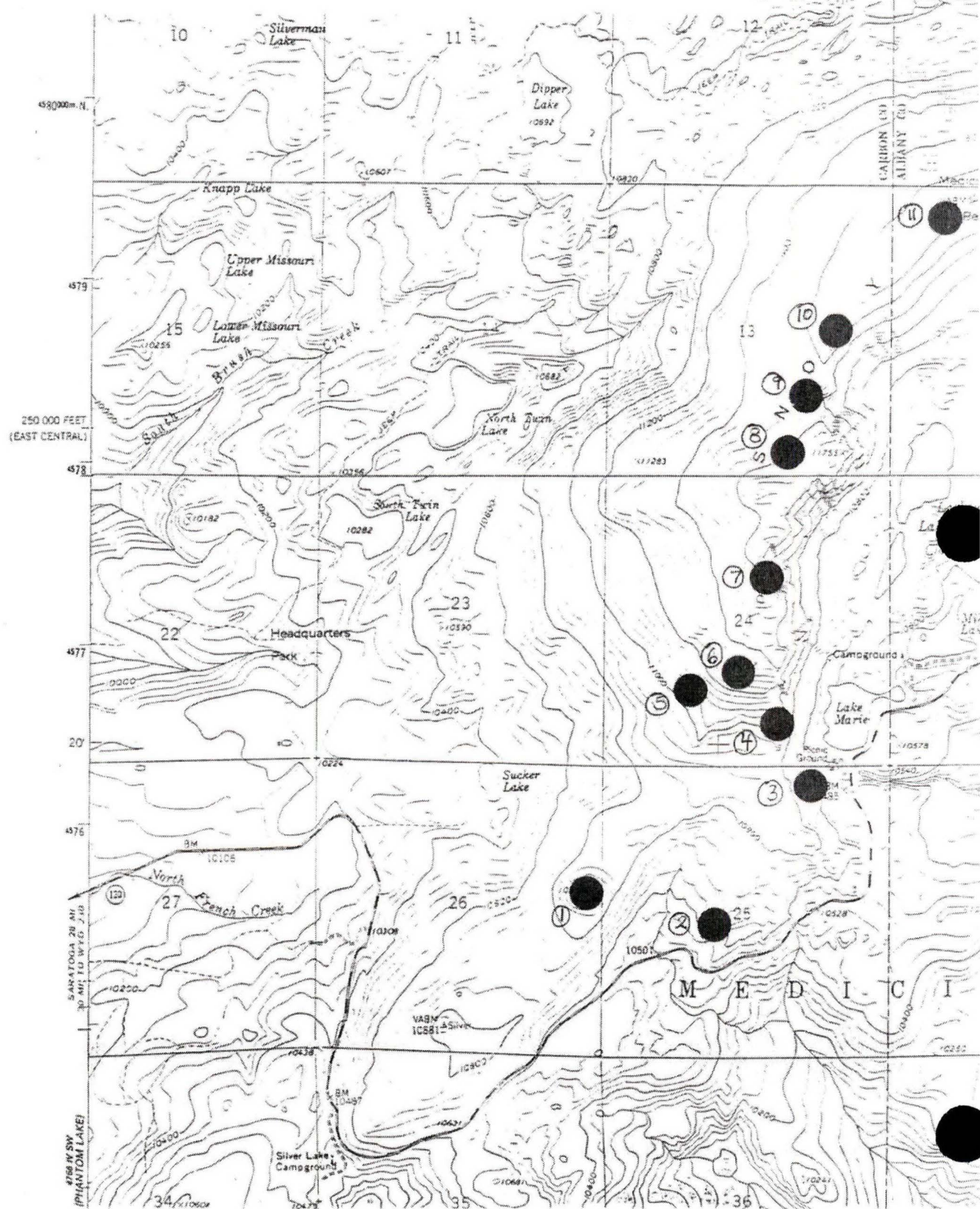
Albany Co.: Ca 1.5 mi N of Brooklyn Lake Campground on Browns Peak (T16N R79W S2). Elev. 10980 ft. 21 July 1991. Bynum 189 (CWC).

Albany Co.: E of Brooklyn Lake, head of Sheep Lake Trail (T16N R79W S11 NW4). Elev. 10560 ft. 8 July 1991. Haines 9076 (CWC).

Albany Co.: Just below summit of Medicine Bow Peak (T16N R79W S18). Elev. 11900 ft. 2 August 1988. Scott 6887 (CWC).



Figure 20. Distribution of Erigeron pinnatisectus in the Medicine Bow Peak Quad [Northwest Quarter]





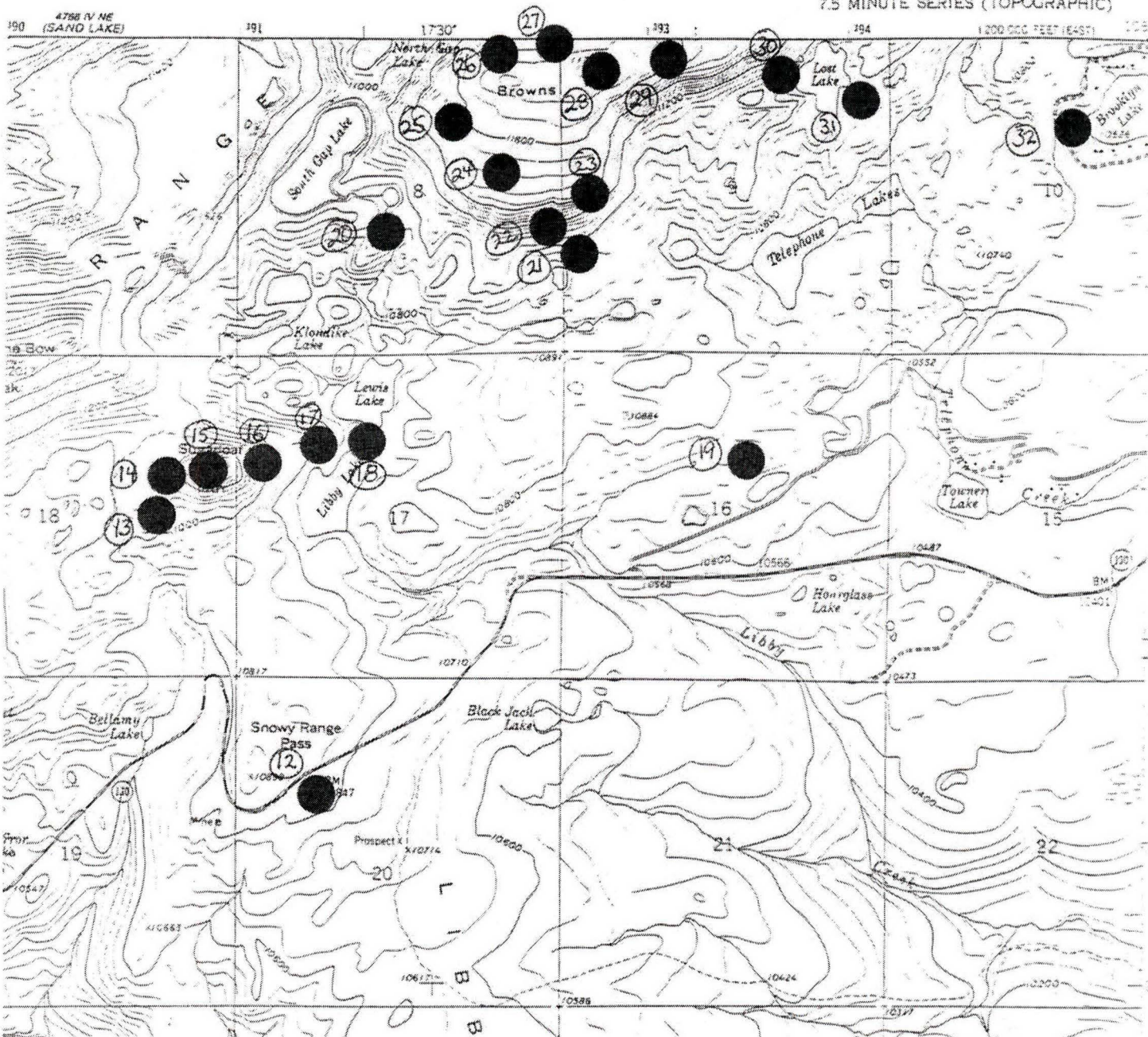


Figure 21. Distribution of *Erigeron pinnatisectus* in the Medicine Bow Peak Quad [Northeast Quarter]

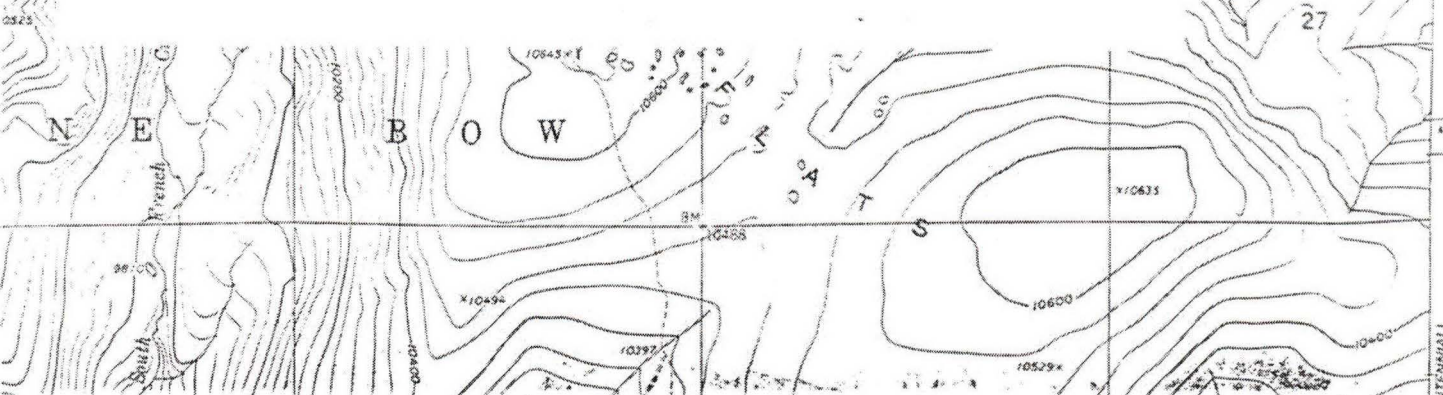
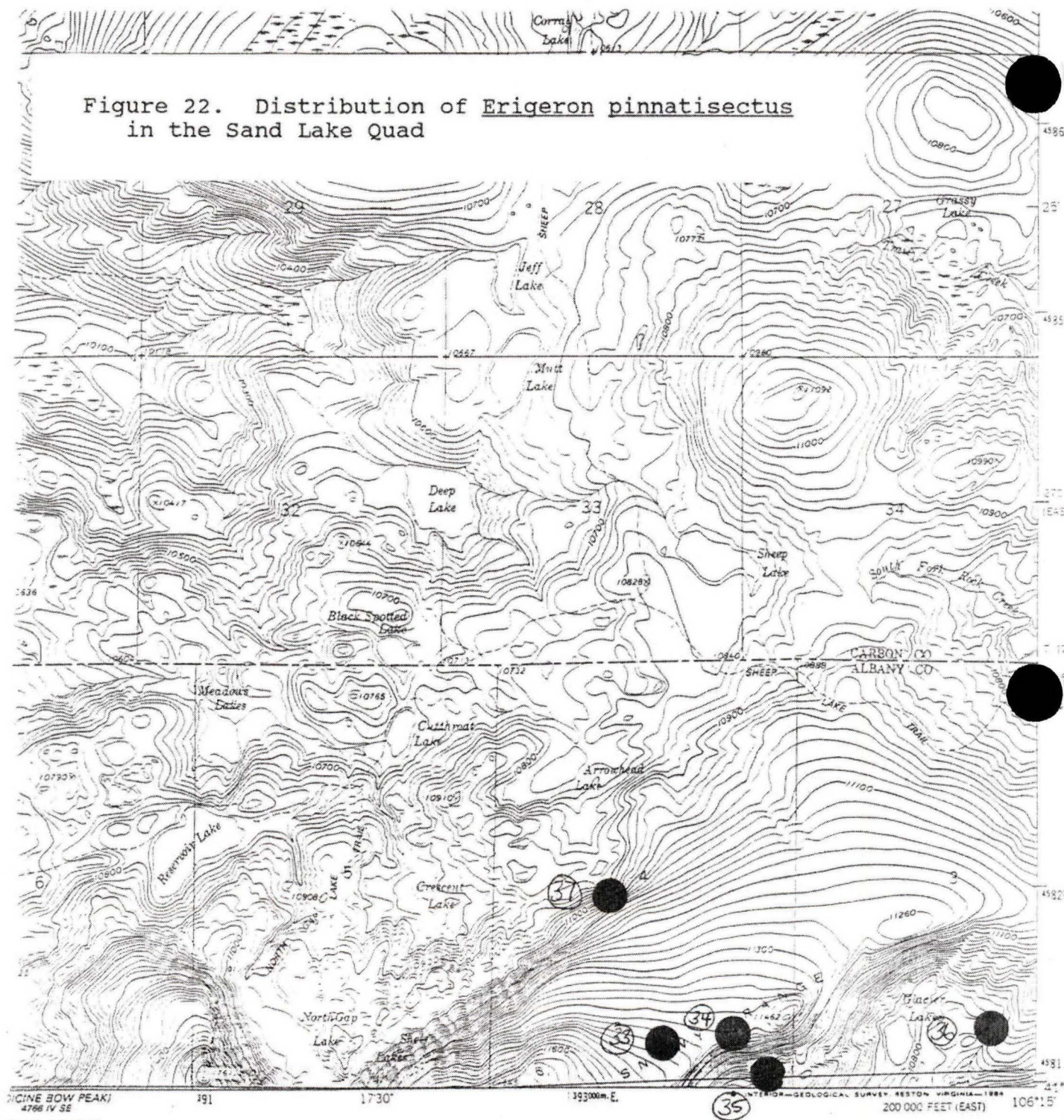


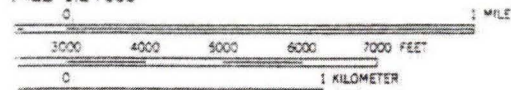


Figure 22. Distribution of Erigeron pinnatisectus in the Sand Lake Quad



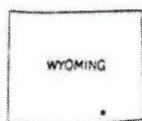
WYOMING BOW PEAK  
4766 IV SE

SCALE 1:24 000



VERTICAL INTERVAL 20 FEET

VERTICAL DATUM OF 1929



QUADRANGLE LOCATION

ROAD CLASSIFICATION  
Light-duty ————— Unimproved dirt - - - - -

NATIONAL MAP ACCURACY STANDARDS  
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092  
MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Revisions shown in purple and woodland compiled from  
aerial photographs taken 1980 and other source data  
Partial field check by U.S. Forest Service. Map edited 1983

SAND LAKE, WY  
41106-D3-TF-024

1961  
PHOTOREVISED 1983  
DMA 4766 IV NE-SERIES V874



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**Paronychia pulvinata Gray**  
**ROCKY MOUNTAIN NAILWORT**  
**Caryophyllaceae (Pink family)**

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**Federal Status:** None

**Natural Heritage Rank:** Wyoming: G3/S1

**Description:** Rocky Mountain nailwort is a cushion-like perennial herb with stems 3-5 cm tall. The densely-matted, thick leaves are bright green, 3-6 mm long, and oval to elliptic with blunt tips. Associated with the leaves are large, persistent, silvery-translucent stipules 2-4 mm long. The greenish-yellow flowers are solitary, petal-less, and immersed among the leaves. The flowers are composed of 5 sharp pointed sepals and 5 stamens (Harrington 1954; Duft and Moseley 1989).

**Similar Species:** Whitlow-wort (Paronychia sessiliflora) differs in having sharp-pointed leaves and is found only at lower elevations (Nelson 1984). Several alpine cushion plant species can be confused with Rocky Mountain nailwort when they are in vegetative condition. Cushion phlox (Phlox pulvinata) has broader, whitish-green leaves with conspicuously ciliate margins. Arctic sandwort (Minuartia or Arenaria obtusiloba) has yellowish-green leaves and lacks silvery stipules. Moss campion (Silene acaulis) has grass-green leaves that are typically longer and narrower than Paronychia. The leaves of Silene are also finely saw-toothed on the margins (use a 10x hand lens).

**Flowering/Fruiting Period:** July-August.

**Habitat:** Windy alpine boulder slopes and fellfields (Nelson 1984). Elevation 10200-12000 ft.

**Global Distribution:** Southern Wyoming, Colorado, northern New Mexico, and northeast Utah (Duft and Moseley 1993). In Wyoming, it is known only from the Snowy Range and Elk Mountain in Albany and Carbon Counties (WYNDD records).

**Population Size/Distribution in Medicine Bow NF:** Twelve new locations were found in the Snowy Range in 1993, bringing the total of known occurrences to 16. Populations generally consisted of only a few, widely scattered mats. Only rarely was this species a dominant, or even significant, component of the mat-plant community. Most occurrences were on wind blasted gravelly outcrops with low cover.

**Existing or Potential Threats:** The plants densely matted growth form probably protects it from grazing and trampling.



Figure 23. Line drawing of Paronychia pulvinata from Weber (1987)

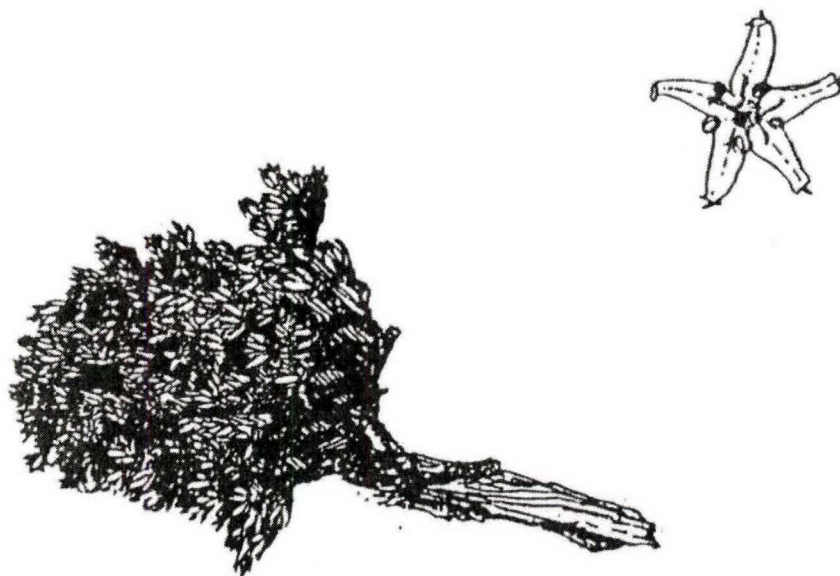


Table 7  
Snowy Range Collection Sites for  
Paronychia pulvinata

I. 1993 Survey Sites

A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 24)

1. Carbon Co.: Southwest slope of Medicine Bow Peak massif, ca 0.5 mi W of Lake Marie, ca 0.75 mi NE of Sucker Lake (T16N R80W S24 NE4 of SW4). Gravelly opening in quartz boulder field. Soil gravelly-sandy with many bare patches. Dominated by Calamagrostis purpurascens and cushion plants. Elev. 11000 ft. 6 August 1993.

30 mats observed in an area of less than 100 sq ft. Most in flower. Mats range from 4-11 in across. Other species observed growing among mats include Erigeron pinnatisectus, Festuca brachyphylla, Luzula spicata & Silene acaulis.

2. Carbon Co.: Ridgeline of Medicine Bow Peak massif ca 0.1 mi W of Lake Marie, 0.25 mi W of WY Hwy 130 (T16N R80W S24 SW4 of SE4). Adjacent to trail at edge of quartzite boulder/talus slope. Rock outcrops with scattered Geum rossii/cushion plant turf communities. Elev. 11000 ft. 6 August 1993.

Isolated dense mats found growing on top of rocks. 10 mats observed, all within 5 feet of trail to Medicine Bow Peak. Widening of trail could result in trampling of these mats.

3. Carbon Co.: Ridgeline of Medicine Bow Peak massif, ca 0.5 mi SSW of Lookout Peak, ca 0.5 mi NW of Lake Marie (T16N R80W S24 SW4 of NE4). Rocky quartz outcrop and boulder/talus slope on windy ridgeline above snow cornice. Pockets of thin soil among rocks with thick layer of mosses and lichens. Community dominated by cushion plants with scattered Geum rossii and krummholz. Elev. 11400 ft. 6 August 1993.

Dominant cushion plant on windy ridge. Mats extensive, averaging 7 inches in width. Ca 20 mats at site. No plants observed in flower. Fertig 14257 (RM).

B. Medicine Bow Peak Quad [Northeast Quarter] (Figure 25)

4. Albany Co.: West slope of Sugarloaf Mountain overlooking saddle of ridge connecting Medicine Bow Peak (T16N R79W S18 SE4 of NE4). Geum turf and sedge mat community on ledges among boulders at foot of loose talus/boulder slope. With Trifolium dasphyllum, Phlox pulvinata, Erigeron simplex. Elev. 11200 ft. 28 July 1993.



Small mats scattered among sedges and other cushion plants on flat, open shelves among rocks. Growing in thin soil deposited directly on top of quartz bedrock. Dominant cushion species on one rock ledge, where an aggregation of mats covers 10 feet of rock. In flower. Fertig 14216 (RM).

7. Albany Co.: North slope of unnamed lake on north side of Telephone Creek Rd, ca 0.25 mi N of WY Hwy 130 (T16N R79W S16 SW4 of NE4). Reddish granite outcrops on rocky meadow with scattered krummholz of Engelmann spruce. Meadow with Erigeron simplex, E. compositus, Achillea millefolium, Polemonium viscosum, Eritrichium nanum. Elev. 10680 ft.

In protected ledge on reddish, lichen-encrusted, sandstone outcrop. With Antennaria microphylla, Draba oligosperma, Sedum lanceolatum, Phlox pulvinata. Densely crowded, low, rounded stems with scattered, minute, petal-less flowers. Adjacent population found on ledges of quartz talus. Fertig 14149 (RM).

9. Albany Co.: South slope of Browns Peak, due N of small lake on section line, ca 1 air mi N of WY Hwy 130 (T16N R79W S8 NE4 of SE4). Steep, S-facing quartz talus slope with large boulders and scattered pockets of grassy turf on consolidated soil. With Silene acaulis, Festuca brachyphylla, Minuartia obtusiloba, Trifolium dasyphyllum. Elev. 11100 ft. 27 July 1993.

Scattered, tightly appressed mats on quartz gravel at base of large rocks. With Phlox pulvinata, lichens. Occasional clumps with scattered flowers. Colonies average 6-8 inches in diameter. One of the dominant cushion species at this site.

10. Albany Co.: Southern rim of Browns Peak plateau, ca 1 air mi N of WY Hwy 130 (T16N R79W S9 NW4 of SW4). Open, S-facing quartz talus slope and Geum turf community at top of steep slope. Elev. 11400 ft. 27 July 1993.

Scattered colonies among quartz rocks on tundra flats. Not found on talus slopes or bare rock. With Phlox pulvinata, Eritrichium nanum, Minuartia obtusiloba, Geum rossii, Erigeron pinnatisectus.

11. Albany Co.: S-facing plateau below summit of Browns Peak, ca 0.5 mi E of South Gap Lake (T16N R79W S8 SE4 of NE4). Geum turf communities scattered among quartz rock talus on gentle slopes and flats. Elev. 11500 ft. 27 July 1993.

Scattered, low mats with a few flowering individuals. With Selaginella densa, Festuca brachyphylla, Potentilla diversifolia, Minuartia obtusiloba, Phlox pulvinata.

12. Albany Co.: Plateau below summit on west side of Browns Peak, ca 0.25 mi E of South Gap Lake (T16N R79W S8 SW4 of NE4). Rocky tundra on gentle slope dominated by cushion plants and Geum rossii. Elev. 11560 ft. 27 July 1993.

Very common among cushion plants. Flowers present on many mats. With Silene acaulis, Minuartia obtusiloba, Phlox pulvinata, Trifolium dasyphyllum.

13. Albany Co.: North end of plateau at summit of Browns Peak, ca 0.1 mi NW of summit knob (T16N R79W S8 NE4 of NE4). Rocky quartz boulder fields with scattered Geum rossii turf and cushion plant communities on alpine flats. Elev. 11680 ft. 27 July 1993.

Scattered mats in cushion plant community with Phlox pulvinata, Minuartia obtusiloba, Silene acaulis.

14. Albany Co.: Summit plateau of Browns Peak due E of summit knob, ca 1.5 mi N of WY Hwy 130 (T16N R79W S9 NW4 of NW4). Grassy, level plain with mixed community of Calamagrostis purpurascens, Festuca brachyphylla, Poa, Artemisia scopulorum, Potentilla diversifolia. Geum less abundant than at other adjacent sites. Elev. 11700 ft. 27 July 1993.

Growing on half-buried, lichen-encrusted brown rocks (not quartz). Common with Phlox, Minuartia, Potentilla. Forms elongate, raised mats up to 8 inches long.

15. Albany Co.: Southeast bank of Lost Lake, ca 1.5 mi N of WY Hwy 130 (T16N R79W S9 SE4 of NE4). Geum rossii turf on ledges and shelves of wide rock outcrop at toe of Browns Peak. Open, flat site with abundant gravel and exposed bedrock. Elev. 10960 ft. 27 July 1993.

Growing in thin soil on quartz outcrops with lichens, Selaginella, Phlox pulvinata. In flower.

## II. Historical Collections

### A. Medicine Bow Peak Quad [Northeast Quarter] (Figure 25)

5. Albany Co.: Snowy Range, near Lewis Lake and Sugarloaf Mountain. Rocky slope. Elev. 10700 ft. 21 June 1969. Hartman 2876 (RM).

6. Albany Co.: Snowy Range, ridge E of summit of Medicine Bow Peak. On rocky ridge with Arenaria obtusiloba and A. rubella. Elev. 11500 ft. 10 July 1969. Hartman 2920 (RM).

8. Albany Co.: Telephone Mines. On the highest alpine slopes. 31 July 1900. Nelson, A. 7856 (RM).



16. Albany Co.: La Plata Mines. 29 August 1898. Nelson, E. 5241 (RM).

La Plata Mines. 24 August 1895. Nelson, E. 1824 (RM).

#### B. Unmapped Occurrences

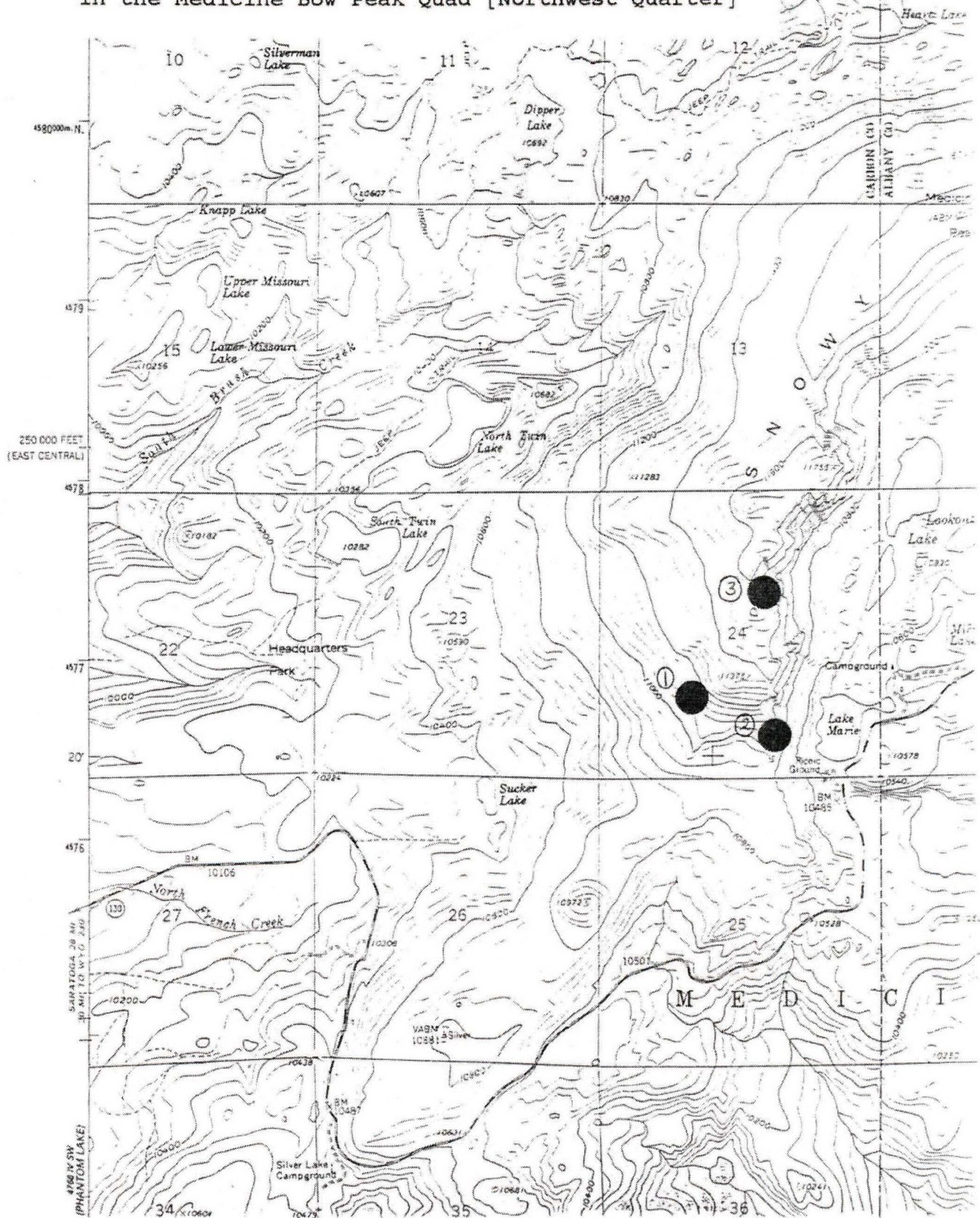
Albany Co.: Snowy Range alpine tundra. Growing on ridge in alpine fell-field. Elev. 11100 ft. 5 July 1954. Bliss 437 (RM).

Albany Co.: Medicine Bow Range. 19 July 1933. Nelson, R. A. 853 (RM).

Albany Co.: ca 1 mi NNE of Brooklyn Lake (T16N R79W S2 W2W2). Rocky alpine slope with Arenaria and Artemisia. Elev. 10800 ft. 27 July 1985. Dorn 4282 (RM). [Morgan Quad]

Albany Co.: Mafic dike along trail up ridge E of East Glacier Lake (T16N R79W S3 SE4). Elev. 11000 ft. 9 July 1991. Haines 9102 (CWC).

Figure 24. Distribution of Paronychia pulvinata in the Medicine Bow Peak Quad [Northwest Quarter]





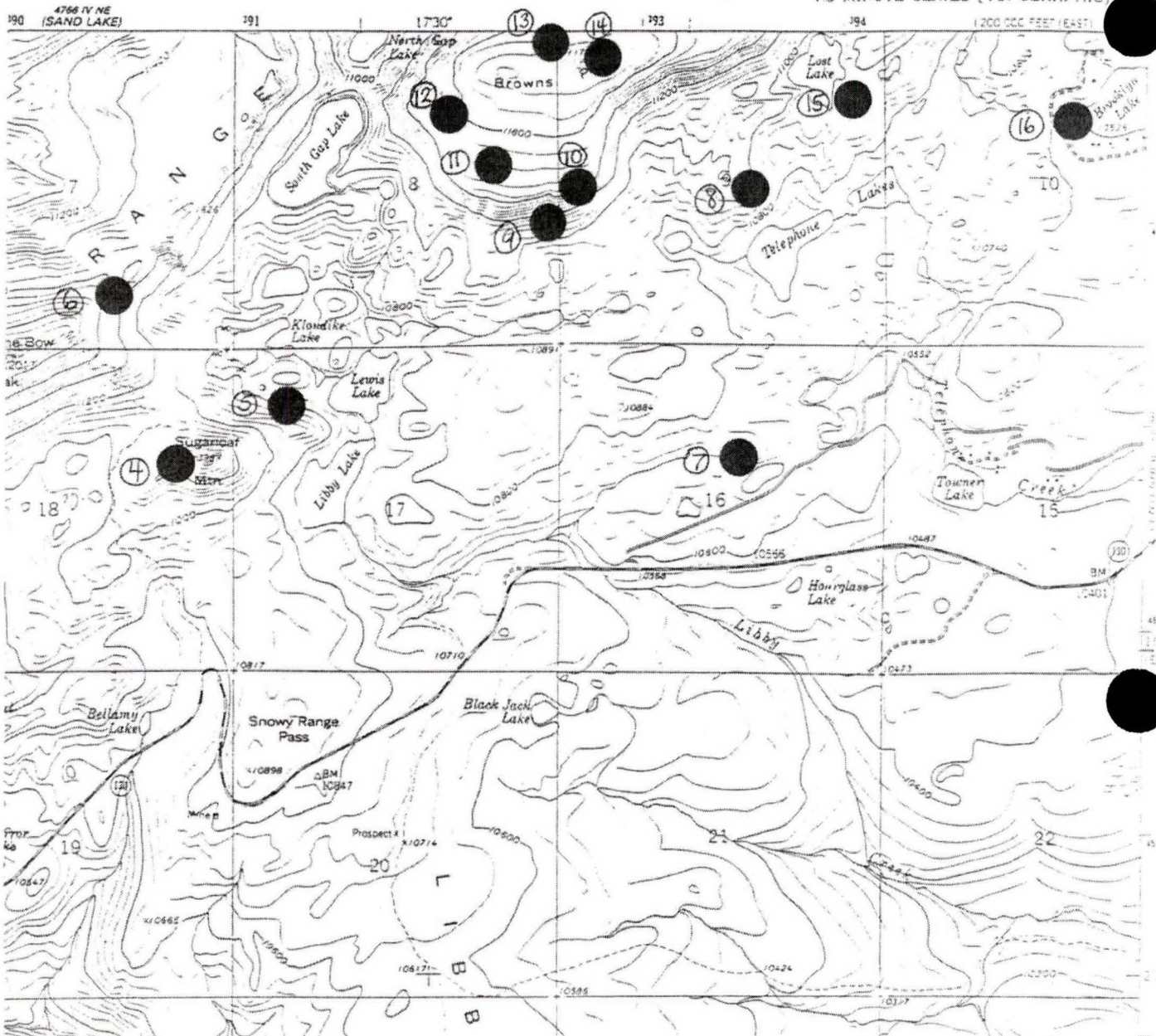
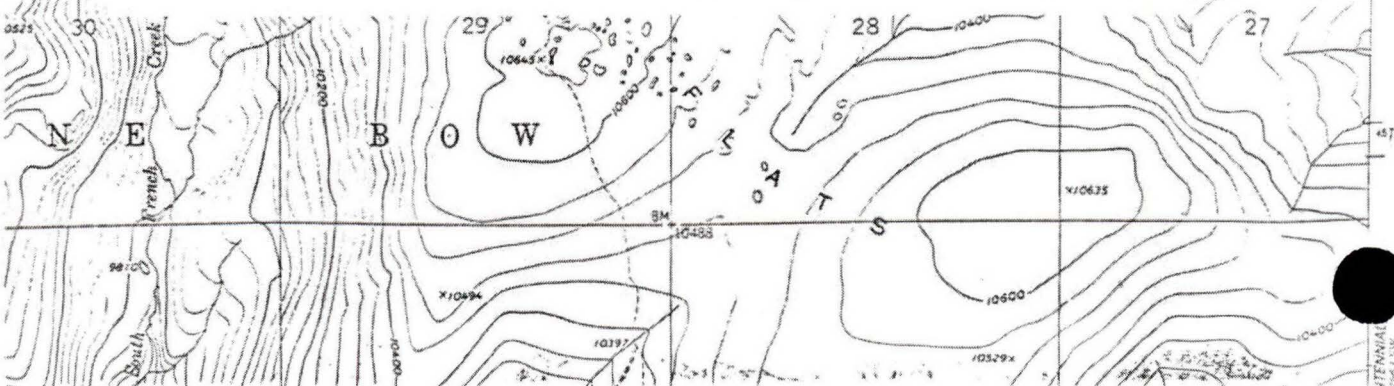


Figure 25. Distribution of *Paronychia pulvinata* in the Medicine Bow Peak Quad [Northeast Quarter]



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**Saxifraga serpyllifolia Pursh**  
**var. chrysantha (Gray) Dorn**  
**GOLDEN SAXIFRAGE**  
**Saxifragaceae (Saxifrage family)**

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**Synonyms:** S. chrysantha; Hirculus serpyllifolia ssp. chrysanthus

**Federal Status:** None

**Natural Heritage Rank:** Wyoming: G4/S1  
Colorado: G4/S?  
Montana: G4/S1  
New Mexico: G4/S1  
Utah: G4/S1

**Description:** Golden saxifrage is a perennial herb with leafy stems 2-6 cm tall. The glabrous, fleshy leaves are linear-oblongate to spoon-shaped, entire, and borne in a tight basal rosette and scattered along the flowering stem. Stolons are absent. Flowers are usually solitary (occasionally 2-3) on each stem and have 5 golden-yellow, oval petals (5.5-7 mm long) and reflexed sepals. The fruits are capsules with 2 curved beaks at the tip (Harrington 1954; Duft and Moseley 1989).

**Similar Species:** Whiplash saxifrage (Saxifraga flagellaris) differs in having prominent stolons and glandular-ciliate leaves. Yellow flowered, mat forming species of Draba have flowers with four petals, pubescent leaves, and fruit without beaks.

**Flowering/Fruiting Period:** July-August.

**Habitat:** Stony ridgecrests and rocky slopes at or above tree line, often near snowbanks. Elevation 11600 ft.

**Global Distribution:** Rocky Mountains from southwest Montana and northwest Wyoming south through Utah and Colorado to northern New Mexico (Duft and Moseley 1989; Lesica and Shelley 1991). In Wyoming, it is known only from the Beartooth, Wind River, and Snowy ranges (WYNDD and CWC records).

**Population Size/Distribution in Medicine Bow NF:** One relatively abundant population was located on the wind-blasted saddle between Lookout Peak and Medicine Bow Peak in 1993. This occurrence may be confluent with the population discovered by Edwin and Lois Payson in 1926. Two other collections have been reported from "northeast of the peak" on Medicine Bow Ridge (Nelson 1984), but these could not be verified by a search of herbarium records at the RM in 1993.



**Existing or Potential Threats:** Unknown.

**Remarks:** This species is presently known from only four to six locations in Wyoming. Due to its rarity range-wide and in the state, it has recently been added to WYNDD's list of plant species of special concern.

Figure 26. Line drawing of Saxifraga serpyllifolia var. chrysantha from Hitchcock and Cronquist (1961)

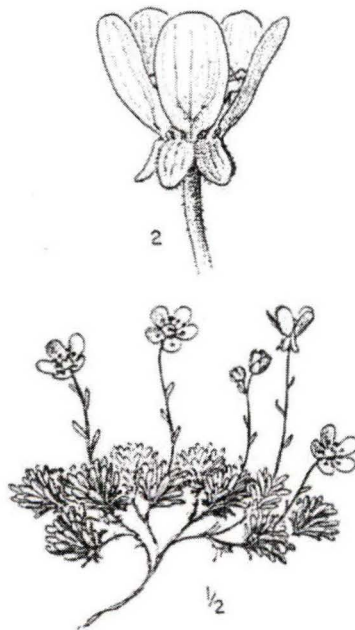


Table 8  
Snowy Range Collection Sites for  
Saxifraga serpyllifolia var. chrysantha

I. 1993 Survey Sites

A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 27)

1. Carbon Co.: Saddle between Lookout Mountain and Medicine Bow Peak, ca 1 mi SW of summit of Medicine Bow Peak, ca 0.5 mi NW of Lookout Lake (T16N R80W S13 SW4 of NE4 of SE4). Wind-blasted ridgecrest in rocky boulder field with scattered turf meadows dominated by Geum rossii, Artemisia scopulorum, and cushion plant communities on gravelly pavement. Elev. 11600 ft. 6 August 1993.

Scattered in sheltered areas of reddish-brown, gravelly pavement. With Draba oligosperma, Erigeron simplex, E. pinnatisectus, Phlox pulvinata. Fertig 14260 (RM).

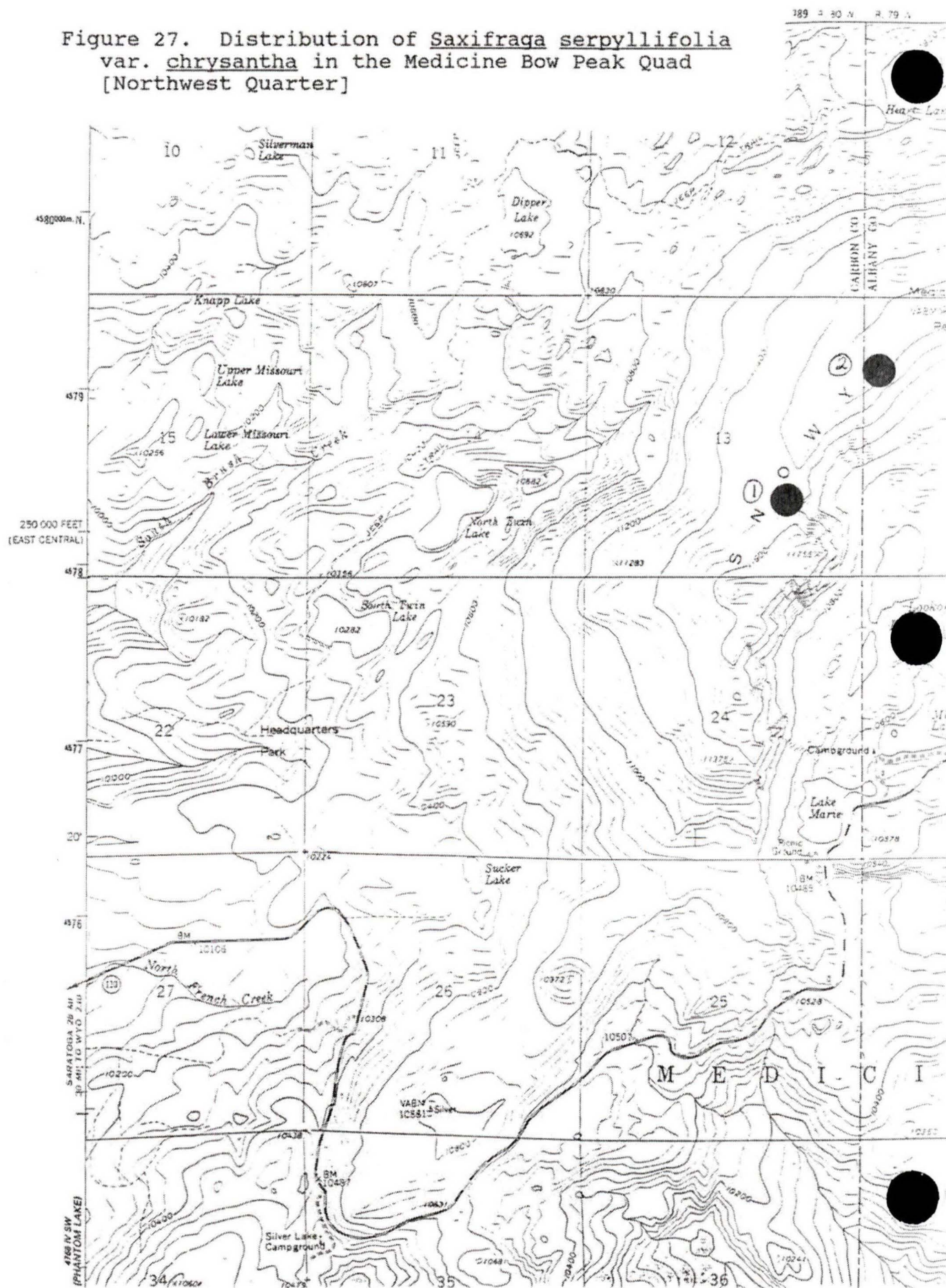
II. Historical Collections

A. Medicine Bow Peak Quad [Northwest Quarter] (Figure 27)

2. Albany Co.: Stony ridge between Medicine Bow Peak and Lookout Peak (T16N R79W S18 NW4). 4 August 1926. Payson & Payson 5157 (RM).



Figure 27. Distribution of Saxifraga serpyllifolia  
var. chrysantha in the Medicine Bow Peak Quad  
[Northwest Quarter]





## DISCUSSION AND RECOMMENDATIONS

Six rare arctic-alpine and southern Rocky Mountain alpine endemic plant species monitored by WYNDD are currently known to occur in the Snowy Range in Medicine Bow National Forest. Two additional rare species are historically known from this area. In total, the high peaks of the Snowy Range have an unusually high concentration of regionally uncommon species. Maintenance of this pocket of exceptional biological diversity is in keeping with the Forest Service's new vision of Ecosystem Management.

The Medicine Bow Peak SBA was established in 1985 to protect much of this biological diversity. The boundaries of the SBA were not officially defined in the Forest Plan, but can be inferred from the supplemental Management Area Map as the site in the vicinity of Medicine Bow Peak managed under prescription 10C (USDA Forest Service 1985). Survey work in 1993 and historical records indicate that seven of the eight rare plants addressed in this report occur within these boundaries as presently defined (only Artemisia pattersonii cannot be confidently placed within the SBA). In all, 23 populations of rare species occur within the 10C management area. At a minimum, these approximate boundaries of the SBA need to be maintained and clearly defined in the proposed revision to the Forest Plan.

A total of 109 populations of rare plant species occurs in alpine and subalpine areas of the Snowy Range outside the boundaries of the SBA. All of these occurrences are found on lands managed under prescription 3A, where the management emphasis is on semi-primitive, non-motorized recreation (USDA Forest Service 1985). Under this prescription, livestock grazing, mineral development, and timber harvesting are allowed. At present, these activities are not a threat to the continued survival of the plant species of concern, although this could change if current patterns of use are altered.

The plant most vulnerable to habitat loss if resource development is accelerated in the 3A area is Erigeron melanocephalus. It occurs at lower elevations than the other rare taxa and in areas adjacent to timber stands. At present, only one population of this regional endemic is protected within the Medicine Bow Peak SBA. Expansion of the boundaries of the SBA to include more of the western or southwestern slope of the Medicine Bow Peak massif would adequately protect 3-9 of the larger populations of E. melanocephalus and would help ensure its long-term survival.

At present, no alpine species from the Medicine Bow National Forest are designated as Sensitive by Region 2 (Estill 1993). Based on the criteria used for ranking Sensitive plants developed for Region 2 by Marriott et al. (1990), several Snowy Range species are potential candidates for future Sensitive recognition. Chionophila jamesii and Paronychia pulvinata both



merit attention on the basis of their status as regionally endemic species with relatively few populations globally, and a moderate to high degree of habitat specificity. These factors make these species vulnerable to habitat loss. Preventive measures, such as protecting some areas of suitable habitat, should be adequate to maintain healthy populations of these species and prevent the need for Sensitive designation (or listing as Threatened or Endangered) in the future.

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